IDENTIFYING PERINATAL PREDICTORS OF DISORGANIZED INFANT-MOTHER ATTACHMENT: AN IMPORTANT STEP TOWARD CONNECTING FAMILIES WITH APPROPRIATE EARLY INTERVENTIONS

by

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Title: Identifying Perinatal Predictors of Disorganized Infant-Mother Attachment: An Important Step Toward Connecting Families With Appropriate Early Interventions

Four decades of research demonstrates that infant-caregiver attachment has important implications for subsequent socio-emotional functioning, with attachment security predictive of a wide range of positive outcomes, and attachment insecurity—and the insecure-disorganized pattern in particular—predictive of later difficulties. This early risk can be ameliorated with early prevention, yet effective prevention depends on a more thorough understanding of the etiology of attachment disorganization. Because measures of caregiver behaviors shown to predict infant-caregiver attachment yield modest to moderate effect sizes, some researchers have suggested the field refocus on understanding the caregiver cognitive processes that underlie infant-caregiver attachment. In an effort to better understand these cognitive mechanisms underlying the development of infant-caregiver attachment disorganization, a previous study by the current author found that compared to women who go on to have a secure attachment relationship with their infant, those who go on to have a disorganized attachment relationship identified more infant faces as expressing anger and fewer as expressing sadness. The current study aimed to expand on this research linking specific patterns of caregiver recognition of negative infant affect with subsequent caregiver-infant attachment outcomes. More specifically, I expected the above findings would generalize to a postnatal (non-exclusively primiparous) sample. I also tested

whether these hypothesized effects were unique or overlapping with two existing predictors of attachment—i.e. the Caregiving Helplessness Questionnaire (George and Solomon, 2011) and Adult Attachment Interview (George, Kaplan, & Main, 1985). Counter to hypotheses, I did not find that maternal recognition of infant anger or sadness predicted infant-mother attachment. I did, however, find that maternal helplessness predicted attachment categorization, and that compared to the mothers who went on to have secure attachment relationships with their infants, those who went on to have disorganized attachment relationships labeled more ambiguous infant faces as surprised. The other two facets of caregiver helplessness (caregiver and child fright and child caregiving) and overall unresolved State of Mind scores did not significantly predict infant-caregiver attachment outcomes, nor did adding these predictors to a model including emotion recognition predictors change the pattern of results. Limitations that may explain these null results and future directions are discussed.

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Bernstein, R.E., Laurent, S.M., Nelson, B.W., & Laurent, H.K. (2015). Perspective-taking induction mitigates the effect of partner avoidant attachment on self-partner overlap. *Personal Relationships, 22,* 356-367. doi: 10.1111/pere.12085

Bernstein, R.E., Ablow, J.C., Maloney, K.C., Nigg, J.T. (2014). Piloting PlayWrite: Feasibility and efficacy of a playwriting intervention for at-risk adolescents. *Journal of Creativity in Mental Health, 9,* 446-467. doi: 10.1080/15401383.2014.902342

Bernstein, R.E., Tenedios, C. M., Laurent, H.K., Measelle, J.R., Ablow, J.C. (2014). The eye of the begetter: Predicting infant attachment disorganization from women's prenatal interpretations of infant facial expressions. *Infant Mental Health Journal, 35,* 233-244. doi: 10.1002/imhj.21438

Bernstein, R.E., Freyd, J.J. (2014). Trauma at home: How Betrayal Trauma and Attachment theories understand the human response to abuse by an attachment figure. *Attachment: New Directions in Relational Psychoanalysis and Psychotherapy, 8,* 18-41.

Bernstein, R.E. (2014). Book review: Treating Complex Traumatic Stress Disorders in Children and Adolescents: Scientific Foundations and Therapeutic Models, *Journal of Trauma & Dissociation, 15,* 607-610. doi:10.1080/15299732.2014.924172

Bernstein, R.E., Laurent, H.K., Hailey, B.C., Measelle, J.R., Ablow, J.C. (2013). Little tyrants or just plain tired: Evaluating attributions for caregiving outcomes across the transition to parenthood. *Journal of Family Psychology, 27,* 851-861. doi:10.1037/a0034651

Bernstein, R.E., Laurent, H.K., Musser, E.D., Measelle, J.R., Ablow, J.C. (2013). In an idealized world: Can discrepancies across self-reported parental care and betrayal trauma during childhood predict infant attachment avoidance in the next generation? *Journal of Trauma & Dissociation, 14,* 529-545. doi:10.1080/15299732.2013.773476

Bernstein, R.E., Measelle, J.R., Laurent, H.K., Ablow, J.C., Musser, E.D. (2013). Sticks and stones may break my bones but words relate to adult physiology? Child abuse experience and women's sympathetic nervous system response while self-reporting trauma. *Journal of Aggression, Maltreatment and Trauma, 22, 1117-1136.* doi: 10.1080/10926771.2013.850138

Bernstein, R.E., Angell, K.L., Dehle, C. (2013). A brief course of cognitive behavioral therapy for the treatment of misophonia: A case example. *The Cognitive Behaviour Therapist, 6(e10),* 1-13. doi:10.1017/S1754470X13000172

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CHAPTER I

INTRODUCTION

Since human infants are born more dependent and vulnerable than most other mammals and remain so for a longer period of time, it is biologically imperative to a human infant's survival that they develop and maintain an attachment relationship (what Bowlby [1969/1982] defined as a "lasting psychological connectedness between human beings" [p. 194]) with those that will keep them safe—i.e. their primary caregiver(s). As such, Attachment theory (Bowlby, 1969) asserts that that forming and maintaining close affectional bonds is an essential component of the human condition,[1] and that humans have evolved via natural selection to be born pre-programmed to form attachments with others and to seek close contact with these others when threatened or upset (e.g. Bowlby, 1969/1982; Hazan & Shaver, 1987). Given this powerful innate motivation, it follows that human infants should readily learn through repeated interactions with their caregiver(s) what set of behaviors will maximize the likelihood that their attachment needs (i.e. their need for proximity with a primary caregiver) will be met. Attachment theory suggests that over time, these early behavioral strategies crystalize to form an attachment pattern or internal schema about the availability of a given attachment figure (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1969/1982; Fraley & Hudson, in press).

Based on this premise, Bowlby's collaborators and students went on to describe what are now accepted as the four patterns of infant-caregiver attachment, including secure attachment

[1] So essential, in fact, he deemed the "attachment behavioral system" to be more significant to human life than are sexual and feeding behaviors (the latter comparison has been supported by Harlow's [1958] early animal study with rhesus monkeys, among others). Indeed, Bowlby (1980) asserted that peoples' attachments to others are the hubs around which their lives revolve.

and three forms of insecure attachment—i.e. avoidant, resistant, and the later defined disorganized attachment (Ainsworth et al., 1978; Main & Solomon, 1990). Importantly, these patterns cannot be accounted for by infant temperament alone (e.g. Mangelsdorf & Frosch, 1999; Pauli-Pott, Havercock, Pott, & Beckman, 2007; Brumariu, Bureau, Nemoda, Sasvari-Szekely, & Lyons-Ruth, 2016), and are relationship-specific, with infants readily able to form different attachment patterns with different caregivers (e.g. Planalp, & Braungart-Rieker, 2013; van IJzendoorn & de Wolff, 1997). Infant attachment patterns are thought to be carried into the future[2] where they guide perceptions and responses in existing and future relationships, and interact with ongoing environmental influences to shape an individual's developmental trajectory (Ainsworth et al., 1978; Bowlby, 1969/1982; Newman, Sivaratnam, & Komiti, 2015). In support of this idea, a large body of longitudinal research demonstrates that infant-caregiver attachment has important implications for subsequent socio-emotional functioning, with infant-caregiver attachment security linked to the most favorable outcomes, and infant-caregiver attachment disorganization predictive of the most problematic outcomes (e.g. Kobak, Cassidy, Lyons-Ruth, & Ziv, 2006; Thompson, 2008). These two attachment patterns,[3] and the findings that tie them to developmental outcomes, are summarized below.

Secure Infant-Caregiver Attachment

Infants who are classified as having a secure attachment relationship with their caregiver

[2] It is important to recognize that Bowlby believed that these working models are never fixed but instead remain plastic throughout development. But in the absense of major schema-shifting experiences, and consistent with the notion of homeorhesis (i.e. the self-sustaining nature of personality), he proposed that human default is for these schema to remain stable over time.

[3] We will be focusing on these two attachment patterns for the remainder of this paper.

are able to explore their environments while in the presence of their attachment figure(s) and are readily able to approach and be soothed by their caregiver during times of stress. Research suggests that approximately 62 - 72% of infants in normative samples display a secure attachment pattern (Campos, Barrett, Lamb, Goldsmith, & Stenberg, 1983; Planalp & Braungart-Rieker, 2013). Infant-caregiver attachment security has been linked to a range of beneficial outcomes in broad domains of socio-emotional competence (Belsky & Cassidy, 1994), physical wellbeing (Ranson & Urichuk, 2008) and decreased incidence of emotional and behavioral problems in adolescence (e.g. Thompson, 2008). More specifically, children who were securely attached as infants have been found to be less aggressive and more empathic and cooperative in peer interactions (Sroufe, Schork, Motti, Lawroski, & LaFreniere, 1984); are more compliant with family rules (Ainsworth et al., 1978); are more cooperative and exhibit more enthusiasm and persistence when solving problems (Matas, Arend, & Sroufe, 1978); and display more appropriate, resilient, and flexible emotion regulation capabilities and behavioral responsivity to a range of social and environmental cues (Sroufe, 2005). These associations support the idea that attachment security exerts a powerful protective influence on children's healthy development, possibly by enabling them to better utilize their caregivers as dependable scaffolders and co-regulators of emotional arousal when distressed (Sroufe, 1988). As it becomes internalized with time, this ability to regulate one's emotions, likely protects children against later psychological and interpersonal difficulties.

Disorganized Infant-Caregiver Attachment

Infants classified as having a disorganized attachment relationship with their caregiver exhibit momentary breakdowns of and/or dissociative intrusions into their attachment behavior during reunifications with their caregiver (e.g. Hesse & Main, 2000), which, according to

attachment theory, represent a critical moment for emotional reintegration following separation. It is believed that for disorganized dyads, this reintegration is thwarted by the infant's conflict between seeking and avoiding their caregiver (Main & Solomon, 1990). The specific behaviors displayed during these lapses are idiosyncratic and diverse but include apprehensive, helpless, or depressed behaviors, unexpected alternations of approach and avoidance of the attachment figure, and other conflict behaviors, such as prolonged freezing or stilling, hiding, or rocking (see Main & Solomon, 1990). Because these lapses are brief, all infants classified as having disorganized attachment relationships are assigned a best-fitting alternate organized (i.e. secure, avoidant, or resistant) classification. Research suggests that as many as 15% of infants in normative samples have a disorganized attachment relationship with a caregiver (van IJzendoorn, Schuengel, & Bakermans-Kranenberg, 1999), a percentage that climbs to between 50% (Thompson, 2008) and nearly 80% (Carlson, Cicchetti, Barnett, & Braunwald, 1989; Lyons-Ruth, 1996) in high-risk and maltreated populations.

As I will describe in further detail in Chapter 2, there are a number of different theoretical explanations for why and how disorganized infant-caregiver attachment develops. Most of these theories converge on the idea that this attachment pattern involves a difficulty in the co-regulation of negative emotions, including anger, sadness, and fear (e.g. DeOliveira, Bailey, Moran & Pederson, 2004). More specifically, infants in disorganized relationships are thought to experience intense negative affect but unlike securely attached infants, are unable to effectively regulate this affect within the attachment relationship. The co-regulation of fear has been particularly emphasized in the context of disorganized attachment (see the section on Frightened/ Frightening caregiver behaviors below), with the caregiver displaying fear toward their infant (perhaps because they are misinterpreting the infant's emotional state), and the infant lacking a

safe way to manage fear, which may fuel continued emotion dysregulation. In support of this general idea, physiological evidence suggests that children in disorganized attachment relationships become more intensely overwhelmed by negative emotions (see Gander & Buchhiem, 2015 for review). Given this difficulty regulating affect, it comes as no surprise that children who were classified as having a disorganized attachment relationship in infancy are found to experience a host of negative socio-emotional sequelae at higher rates than are those who had secure or even organized-insecure attachment relationships during infancy.

Indeed, longitudinal studies consistently reveal that the disorganized classification of infant-caregiver attachment has been shown to be the attachment pattern most strongly related to later pathology (e.g. Fearon, Bakermans-Kranenburg, van IJzendoorn, Lapsley, & Roisman, 2010; Kobak et al., 2006; Lyons-Ruth & Jacobvitz, 1999) and some researchers have gone so far as to consider it one of the earliest measurable risk factors for a maladaptive developmental trajectory (Hesse & Main, 2000; Sroufe, Carlson, Levy & Egeland, 1999; van IJzendoorn, et al., 1999). Indeed, disorganized infant attachment classification between 12-18 months has been associated with internalizing problems at 36 months (Shaw, Keenan, Vondra, Delliquadri, & Giovannelli, 1997); problem behavior and anxiety in preschool (Carlson, 1998; Lyons-Ruth, Zoll, Connell, & Grunebaum, 1989); disruptive behavior (Shaw, Owens, Vondra, & Keenan, 1996) and peer aggression (Lyons-Ruth, Alpern, & Repacholi, 1993[4]) at age five; externalizing

[4] In this study, Lyons-Ruth and colleagues (1993) found that attachment disorganization at 18 months was the strongest single predictor of teacher-rated child hostile behavior toward peers (with 71% of the hostile preschoolers classified as disorganized in their infant attachment relationship). At a seven-year follow up, the link between infant disorganization and

problems at age nine (Munson, McMahon, & Spieker, 2001); behavior problems in elementary school and high school (Carlson, 1998); dissociation (Ogawa, Sroufe, Weinfield, Carlson, & Egeland, 1997; West, Adam, Spreng, & Rose, 2001) and global psychopathology in adolescence (Carlson, 1998); PTSD symptoms at age 17.5 (Enlow, Egeland, Carlson, Blood, & Wright, 2014); and self-injurious behaviors in early adulthood (Sroufe, 2005; West, Spreng, Rose, & Adam, 1999). These associations support the idea that attachment disorganization places children at risk for later socio-emotional difficulties, possibly because such children failed to develop an organized way in which to regulate emotional arousal early on.

A Rationale for Early Intervention

Critically, while the above studies underscore how early attachment disorganization has significant long-term implications for human performance and psychological wellbeing, we also know that these poor prognoses can be altered with a number of evidence-based attachment-informed parenting interventions, which have proven to be at least moderately successful in decreasing attachment insecurity and increasing attachment security (e.g. Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2003; Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2005). These interventions include but are not limited to Child-Parent Psychotherapy (Lieberman & Van Horn, 2008), Family Attachment Narrative Therapy (May, 2005), Parent–Child Interaction Therapy (Thomas & Zimmer-Gembeck, 2011), the Minding the Baby home visitation program (Slade, Sadler, & Mayes, 2005), Infant-Parent Psychotherapy (Cicchetti, Rogosch, & Toth, 2006), and Attachment and Biobehavioral Catch-up (Dozier et al., 2009). Importantly, these interventions are only as helpful in supporting attachment security as they are able to reach

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externalizing problems was even higher, with 83% of participants with externalizing problems having been deemed disorganized in infancy (vs. just 13% of non-externalizing children).

caregivers and caregivers-to-be who are at risk. Thus, it is extremely important that we come to better understand indicators of early risk of infant-caregiver attachment disorganization so that we may both refine existing interventions to more precisely act upon the mechanisms underlying attachment disorganization and also more effectively identify families at risk to provide targeted prevention and intervention services.

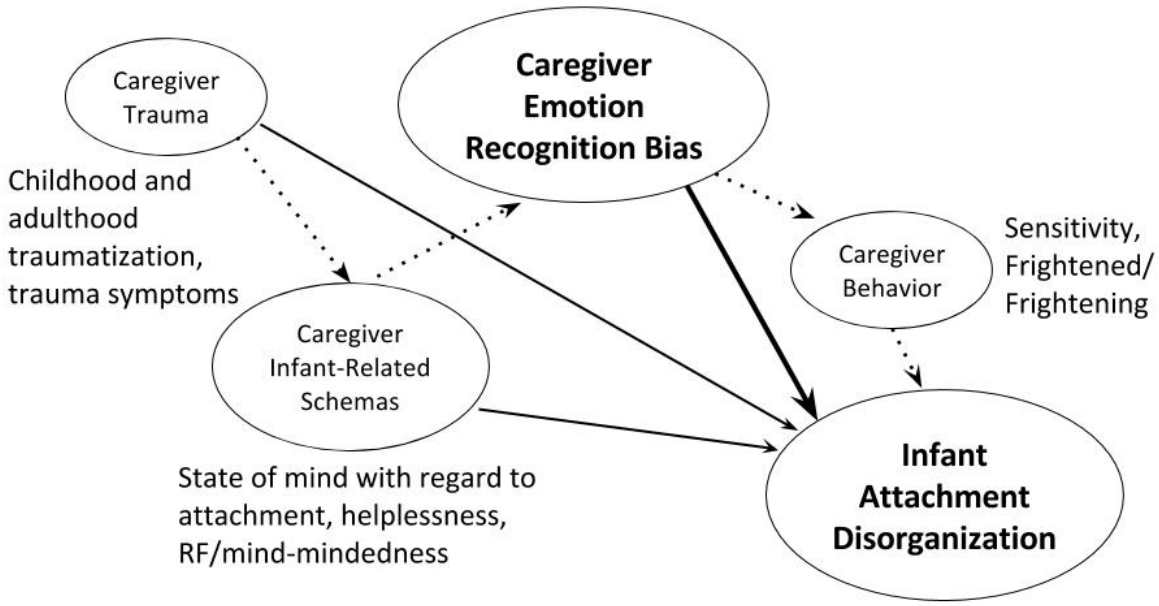
CHAPTER II

PREDICTORS OF INFANT ATTACHMENT

While researchers have been examining the precursors and predictors of infant attachment for over four decades now, the field remains far from understanding the exact mechanisms that underlie the development of specific caregiver-infant attachment patterns. Early theorizing discussed the "caregiving behavioral system" (i.e. the caregiver counterpart to the infant attachment system, which involves the evolved drive to respond to the needs of dependent others; Bowlby 1969/1982; Solomon & George, 1996) and proposed that caregiver protective and supportive behaviors, and caregiver sensitivity in particular—i.e. a caregiver's ability to perceive and accurately interpret an infant's signals and respond to them appropriately and promptly—was responsible for the development of infant-caregiver secure vs. insecure attachment (Ainsworth, Bell, & Stayton, 1974). In the current dissertation, I will review the literature linking caregiver sensitivity and other caregiver experiences, behaviors, and schemas to infant-caregiver attachment outcomes, and join others in the field in suggesting that research on the mechanisms underlying early attachment shift from a focus on caregiver behaviors to caregiver cognitive biases—and in this case, the interpretation of infant displays of emotion in particular—which we argue are central to the development of infant-caregiver attachment disorganization. We propose that these biases are likely related to (but a better predictor of attachment than) other traditionally used predictors, discussed in turn in the sections below. The conceptual model steering the current investigation is represented in Figure 1.

Figure 1

Proposed Conceptual Model Predicting Infant-Caregiver Attachment Disorganization (solid paths to be tested in the current study).



Caregiver Sensitivity

Ainsworth and colleagues (1974) posited that when caregivers consistently and sensitively respond to their infant's bids for reconnection and comfort, infants develop a secure attachment with their caregiver; conversely when caregivers are rejecting or inconsistent in response to these bids, infants develop an insecure attachment with their caregiver. While research by Ainsworth and colleagues (1978) successfully demonstrated that maternal sensitivity (particularly in response to infant distress; Leerkes, 2011) indeed explained much of the variance in infant-mother attachment, more recent meta-analyses demonstrate that this association is

modest to moderate in size (e.g. de Wolf & van IJzendoorn, 1997; van IJzendoorn, 1995; McElwain & Booth-LaForce, 2006; Verhage et al., 2016).

In an effort to explain these modest effects of behavioral sensitivity, some have proposed that the construct has been inadequately assessed via relatively brief observations within a laboratory setting. For example, Leerkes and colleagues illustrate, "two mothers may respond to infant distress by picking up and soothing their infant via a series of vocalizations and rhythmic movements. One may do so because she recognizes that being upset is an unpleasant state, she wants to make sure her infant feels better, and she believes that responding will help her infant learn to trust her. The other may do so because her infant's cries make her anxious and she simply wants the crying to end for her own sake. It is highly likely that the former mother is more sensitive, but based on our brief observation, this might not be obvious" (Leerkes, Gedaly, & Su, 2016, p. 28). As such, they propose it may be that the cognitive factors thought to underlie caregiver sensitivity could better predict infant-caregiver attachment—either because these cognitive factors are more inclusive or more measurable. Indeed, Leerkes, et al. (2016) argue that "given brief and infrequent observations of sensitivity with few competing demands, it may be relatively easy for insensitive mothers to appear to be more sensitive than they typically behave with their infants. Measuring how parents tend to think...may be one way to distinguish between parents who are typically sensitive versus those who were observed to be sensitive, but are typically less so" (p. 29).

Caregiver Frightening and Frightened Behavior

At the other end of the spectrum from the sensitive caregiving behavior theoretically believed to underlie secure infant-caregiver attachment, caregiver frightening behavior is thought to underlie disorganized infant-caregiver attachment (e.g. Hesse & Main, 2006). More

specifically, Mary Main proposed that disorganized infant-caregiver attachment emerges from a fundamental contradiction between the attachment system and the infant's innate instinct to flee from threat (i.e. "fright without solution"). Because the attachment system requires that the infant seek protection from the attachment figure when alarmed, "an infant who is frightened *by* the attachment figure is presented with a paradoxical problem – namely, an attachment figure who is at once the source of and the solution to its alarm" (Main & Hesse, 1990, p. 163; italics added). Parents who frighten the child with abusive or dissociative behavior, or who are themselves frightened when the child seeks comfort because they are reminded of a past trauma, are thought to cause such a paradox for their infants.

Indeed, several researchers have found support for this proposed association (e.g. David & Lyons-Ruth 2005; Lyons-Ruth, Bronfman, & Parsons, 1999; Madigan et al., 2006; Main & Hesse, 1990; Schuengel, Bakermans-Kranenburg, & van IJzendoorn, 1999). For example, Schuengel and colleagues (1999) coded two home visits filmed when infants were 10 or 11 months old for maternal frightening behavior (Main & Hesse, 1992) and then had the dyads return to the lab between 14 and 15 months to assess infant-mother attachment with the Strange Situation. The authors found that mothers of disorganized infants had higher scores for frightening behavior than mothers of non-disorganized infants (Schuengel, Bakermans-Kranenburg, & van IJzendoorn, 1999). Importantly, this association could not be better explained by maternal depressive symptoms or observer-rated maternal sensitivity.

While these findings are certainly important to our understanding of the etiology of infant-caregiver disorganization, this measure is equally prone to the limitations described above for maternal sensitivity. Namely, brief observations of caregiver behavior can fail to capture the full range of frightening behaviors to which the infant is exposed, and perhaps more importantly,

the underlying maternal schemas driving these behaviors. As such, the same logic follows that cognitive measures of caregiver risk may be more powerful in predicting infant-caregiver disorganization.

State of Mind with Regard to Attachment

Faced with these limitations in the predictive power of observed maternal behaviors, researchers have concluded that the development of infant-caregiver attachment "may depend on multiple pathways besides caregiver sensitivity and on multiple levels besides the behavioral level (e.g., the cognitive level)" (see meta-analysis by Verhage et al., 2016, p. 359). The focus on the caregiver's cognitions in the search to understand the development of infant-caregiver attachment is far from new. As discussed above, Ainsworth's conceptualization of sensitivity contains within it the ability to notice and accurately interpret an infant's cues—both of which are cognitive capacities. Likewise, Bowlby wrote at length about the internal working models or mental schemas individuals carry with them throughout development, containing within them expectations about the role of self and others within close relationships. Ainsworth's student, Mary Main, made a substantial contribution to the field of attachment with her proposal that these internal mental representations might be captured via an adult's narrative about their childhood as expressed during an interview. More specifically, Main, Kaplan, and Cassidy (1985) proposed that adults organize attachment-relevant information within a mental representation of attachment, which provides "a set of conscious and/or unconscious rules for the organization of information relevant to attachment and for obtaining or limiting access to that information" (Main, Kaplan, & Cassidy, 1985, p. 67).

Based on this proposal and the theoretical assumption that attachment is transmitted across generations, Main and colleagues developed the Adult Attachment Interview (George,

Kaplan, & Main, 1985) and the associated coding manual, which was created via a data-driven, incremental process during which developers examined various features of the interview in concordance with the interviewee's infant-caregiver attachment classification. In the end, they successfully demonstrated that qualitative differences (see Hesse, 2008 for a review) among adults' narratives about their early attachment experiences were closely associated with the quality of attachment relationships with their own children.

Main has conceptualized a substantial portion of the differences among AAI classifications as representing a difference in one's ability to flexibly deploy attention (e.g. Main, 2000). Like the infant in the Strange Situation who splits their attention between the task of exploring a novel situation while attending to and maintaining contact with their caregiver, adults engaged in the AAI are tasked with the dual objectives of retrieving early memories while relaying these memories to and interacting with an unfamiliar interviewer in an appropriate way. Main proposes that like secure infants, Autonomous adults are able to flexibly split their attention across these two tasks. In contrast, Unresolved speakers become strikingly incoherent when speaking about loss or trauma—suggesting that when speaking about these topics, they become absorbed by these memories/experiences. These shifts usually take the form of a "lapse in the monitoring of reasoning,"[5] a "lapse in the monitoring of discourse,"[6] or a "lapse in

[5] A lapse in the monitoring of reasoning can take various forms, but includes indications of disbelief that a deceased loved one is really dead; indications of a sense of being causal in a death where no material cause is present; indications of confusion between the deceased and self; disorientation with regard to time/space; psychologically confused statements; unsuccessful denial of the occurrence, nature, or intensity of abuse; a fear of being possessed by an abuser; or a sense of being causal in abuse.

monitoring of behavior."[7]

Main and colleagues proposed that such lapses during the AAI represent the caregiver's unintegrated fear related to past loss or abuse (Main & Hesse, 1990). They and others suggest that similar anomalies in behavior are likely to occur during caregiving interactions, and that such lapses in the dyadic context can be frightening and/or dysregulating to infants, which leads in turn to infant-caregiver attachment disorganization (e.g. Green & Goldwyn, 2002).

As was the case with Ainsworth's aforementioned findings on the link between maternal sensitivity and infant-mother attachment, researchers attempting to replicate Main and colleagues' impressive findings have found smaller effect sizes. In an initial meta-analysis, van IJzendoorn (1995) found that the correlation between parent and infant attachment classifications was $r = .48$ for the secure–autonomous pairing, and $r = .31$ for the unresolved-disorganized pairing. Within this review, he found 53% of disorganized infants had parents who were classified as unresolved, leaving 47% of disorganized infants unaccounted for by parental unresolved states of mind. In a more recent and much larger replication of this meta-analysis, Verhage and colleagues (2016) found still significant but even smaller combined effect sizes of $r = .31$ for the autonomous versus non-autonomous classifications, and $r = .21$ for the unresolved versus non-unresolved classifications. Caregivers with unresolved representations were more likely to have

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[6] A lapse in the monitoring of discourse can take various forms, but includes unusual attention to detail; uncharacteristically poetic/eulogized phrasing; prolonged silences suggestive of freezing; sudden shifts away from the topic; invasions of loss/trauma into other topics; or disoriented speech.

[7] A lapse in the monitoring of behavior entails descriptions of anomalous redirections of distress following loss; or reports of "extreme" behavioral responses as the time of a loss or trauma.

disorganized attachment relationships with their children and less likely to have both secure and avoidant attachment relationships, but not less likely to have resistant attachment relationships. These findings suggest that AAI classifications are not an extremely precise predictor of infant-caregiver attachment, and reinforce the need to pursue more specific caregiver cognitive processes that give rise to this pattern of attachment.

In an effort to explain the remaining variance in infant-caregiver attachment unexplained by caregiver state of mind, various researchers have proposed additional scales that can be coded from the AAI that might better predict infant-caregiver attachment. The most researched of these additional scales include the Hostile/Helpless state of mind (H/H; e.g. Lyons-Ruth, Melnick, Atwood, & Yellin, 2003) and Reflective Functioning (e.g. Fonagy, Steele, Moran, Steele, & Higgitt, 1991; Fonagy, Gergely, Jurist, & Target, 2002), discussed below.

Caregiver Hostile/Helpless State of Mind and Caregiver Helplessness

Lyons-Ruth and colleagues (2003) have proposed that some parental states of mind described in the clinical literature and likely to be related to infant disorganization are not yet captured by coding criteria for (unresolved) states of mind (Lyons-Ruth, Yellin, Melnick, & Atwood, 2005). They go on to argue that by limiting the recognition of unresolved states of mind to explicit reports of loss and trauma, we are missing the ability to capture caregiver's chronic dysregulation within attachment relationships that also likely leads to infant-caregiver disorganization. Their "H/H" coding system (Lyons–Ruth et al., 2003) captures "hostile" (i.e. discourse wherein an early attachment figure is globally devalued) or "helpless" (i.e. discourse wherein pervasive feelings of fearfulness and helplessness are evident) states of mind. This H/H coding system has exhibited discriminant validity in that it did not overlap substantially with existing subscales within the Main and Goldwyn (1998) coding system, including unresolved

state of mind.

In a study of 45 low-income mothers with high rates of childhood trauma, Lyons-Ruth et al. (2005) found that the H/H codes were significantly more concordant with infant disorganized -alternate insecure classification than was Unresolved status, and the H/H state of mind accounted for variance in disorganized infant behavior not associated with the Unresolved classification. They further found that the association between maternal H/H state of mind and infant-mother attachment disorganization was at least partially mediated by mothers' disrupted affective communication with their infants, suggesting that caregivers' reading of infant emotions may play an important role in this association.

Attachment researchers George and Solomon have likewise been interested in the concept of caregiver helplessness as a likely source of infant-caregiver attachment disorganization. On this, they have written, "we find the concept of maternal helplessness to be helpful in thinking about the underlying representational and behavioral processes that disorganizes caregiving. Bowlby (1969/1982) emphasized that the protective function of attachment requires the attachment figure to assume a position of being older, wiser, and more powerful than the child. Helplessness and abdicated care undermine a mother's ability to maintain this position in the relationship" (George & Solomon, 2011, p. 139). Solomon and George have conceptualized caregiver helplessness as caregiving disorganization and abdication of care, and their rating scale contains four domains of helplessness: (1) a view of self, child, or caregiving circumstances as out of control; (2) mother or child as frightened; (3) role revered caregiving; and (4) psychological merging with and/or glorification of the child. In support of this idea, the co-authors have found that helplessness as rated by participants' responses within

the Caregiving Interview[8] (George & Solomon, 1989) predicts concurrent child disorganization at age six (Solomon & George, 2006). They also developed the Caregiving Helplessness Questionnaire (CHQ; George & Solomon, 2011), as a self-report questionnaire to measure caregiving helplessness "in circumstances . . . not conducive to the use of" more extensive interview assessments and classification systems (George & Solomon, 2011, p. 157).

Reflective Functioning

In a broader effort to understand the caregiver attributes that predict not just infant-caregiver attachment disorganization but infant attachment more broadly, some researchers have proposed that reflective functioning (Fonagy et al., 1991), and the closely related construct of "mind-mindedness" (Meins, Fernyhough, Russell, & Clark-Carter, 1998; Meins, Fernyhough, Fradley, & Tuckey, 2001) may play an important role. Reflective functioning (RF) has been defined as the psychological processes underlying the capacity to perceive and understand oneself and others in terms of each other's mental states (i.e. to mentalize; Fonagy, et al., 2002). Fonagy and colleagues (2002) conceptualize RF as extending beyond introspection and empathy to also encompass the ability to create sense and meaning by perceiving the self and others as having intentions and feelings. The closely related concept of mind-mindedness shares RF's focus on the understanding of internal states in interpreting behavior, but its referent is more specific, with mid-mindedness referring to the ability of caregivers to accurately to read their

[8] In this relationship-specific interview, "parents are asked to describe themselves as parents and to describe the affective aspects of their experiences being the parent of a particular child (e.g., joy, guilt, anger), five adjectives that describe their relationship with their child, and their experiences coping with attachment relevant situations (e.g., separation, beginning school)" (George & Solomon, 2011, p. 144)

infants' states. The most common measure of RF[9] contains four broad dimensions, including 1) awareness of the nature of mental states; 2) explicit effort to tease out mental states underlying behavior; 3) recognition of developmental aspects of mental states; and 4) awareness of mental states in relation to the interviewer.

Fonagy and colleagues have conceptualized RF as an implicit process working at the level of procedural memory rather than a conscious attempt to think about inner states (Fonagy, Target, Steele, & Steele, 1998). Like executive functioning (e.g. Diamond, 2013), RF is seen as a process and also a trait-like individual difference variable, with individuals varying in their ability to engage in RF. It is also presumed to generalize across referents—i.e. that an adult's RF in relation to their own childhood experiences and attachment figures indicates their capacity to mentalize about their infant as well (Fonagy, et al., 1991).

In support of the idea that caregiver RF serves as a mechanism underlying attachment-relevant caregiving behaviors, research has shown that RF is moderately to highly correlated with infant-caregiver attachment security (e.g. Kelly, Slade, & Grienenberger, 2005). Analogous findings have been shown for mind-mindedness (e.g. Lundy, 2003; Slade et al., 2005). For example, Slade et al. (2005) found that a mother's capacity to mentalize about her own child relates both to her state of mind with regard to attachment (as assessed by AAI) and the attachment classification of her child (as classified via the Strange Situation). Together, such findings highlight the fact that a caregiver's ability to recognize and interpret infant emotion cues

[9] RF is most often measured through the Adult Reflective Functioning Scale (ARFS; Fonagy, et al., 1998)—a standardized coding system that is then applied to the adult's AAI transcript or else other attachment-relevant interview, such as the Working Model of the Child Interview (WMCI; Zeanah, Benoit, & Barton, 1986)

are an important ingredient in the development and maintenance of infant-caregiver attachment.

Caregiver Identification of Infant Affect

In the above sections, I have summarized the theorizing and empirical work linking caregiver sensitivity, caregiver frightening and frightened behaviors, caregiver unresolved state of mind, hostile/helpless state of mind, and reflective functioning/ mind-mindedness with infant-caregiver attachment, and disorganized vs. secure infant-caregiver attachment in particular. I have also described a recommendation previously described in the literature (e.g. Leerkes et al., 2016) to identify cognitive features within caregivers that underlie infant-caregiver attachment. While the aforementioned findings establishing these constructs as predictors of infant-caregiver attachment are certainly suggestive of some of the caregiver cognitive processes associated with infant-caregiver attachment, none of the primary caregiver measures of disorganization risk – i.e., sensitivity, frightening/frightened behavior, or Unresolved state of mind– get precisely at the underlying cognitive biases that would give rise to disorganized attachment.

As I have previously suggested at the beginning of this chapter, one unifying cognitive process that may serve as a pathway by which all of the constructs cited above—i.e., maternal unresolved state of mind, hostility/helplessness, reflective functioning, and mind-mindedness—exert an influence on the mother-infant interactions that inform attachment is caregiver bias in the recognition of emotion (see Figure 1). More specifically, these constructs all seem to share a similar dimension of (mis)interpreting infant emotion expressions that could be used to predict attachment security vs. disorganization. For example, it may be that women high in caregiver helplessness—who view the child as powerful and the self as lacking control—see more anger (a powerful emotion eliciting distance from and/or fear in others) and less sadness and/or fear (vulnerable emotions eliciting approach from and/or sympathy in others) in their infant's facial

expressions of emotion. Likewise, those high in RF/mind-mindedness may be particularly more attuned to and able to recognize their child's sad states, which promotes the approach, nurturance, and comfort that is thought to promote attachment security. Additionally, women with an unresolved state of mind with regard to loss or trauma may be hypervigilant to signs of interpersonal rupture, and thus see more anger in infant faces. For a fuller discussion on the relation between state of mind and emotional awareness, see DeOliveira, Moran, and Pederson (2005).

Unfortunately, given the way that existing cognitively-focused constructs are measured, it is impossible to disentangle how much of the association between attachment outcomes and Hostile/Helpless (H/H) state of mind, Reflective Functioning, and Mind-Mindedness are driven by these emotion recognition biases. More specifically, H/H state of mind and RF are measured via the AAI, which was not developed to test cognitive biases in the interpretation of emotions. In fact, the AAI asks interviewees only briefly to speculate about the internal states of others in just a few, specific contexts,[10] providing limited opportunity to capture the way in which they

[10] More specifically, interviewees are asked about these thoughts in two of the 20 core AAI questions (i.e. "Why do you think your parents did those things [that made respondent feel rejected, if applicable]? Do you think they realized they were rejecting you?" and later, "Why do you think your parents behaved as they did during your childhood?"). RF is also sometimes coded from the Working Model of Child Interview (WMCI; Zeanah, Benoit, & Barton, 1986), which queries this skill in three of 19 core questions (i.e. "How has the baby reacted to separations from you?"; "Does your baby/child get upset often?"; "Does he/she know you don't like [the behavior most difficult for parent to manage]?"; and "What does the child do after you

think about the internal states of others. Even in these moments, the interviewee's analysis of the inner worlds of others cannot be compared against any objective data in order to infer cognitive biases in the interpretation of other's emotions.

Likewise, while mind-mindedness is not measured via the AAI, it is often operationalized as the frequency with which caregivers make mind-related comments within a dyadic interaction. Thus, similarly to the aforementioned limitations to behavioral assessments of caregiver sensitivity, this operationalization effectively conflates the cognitive process of mind-mindedness with the behavior of acting on this process (i.e. vocalizing one's thoughts or perceptions). Given the recent recommendations that researchers identify underlying cognitive dimensions influencing attachment rather than relying on the coding of brief behavioral observations (Leerkes et al., 2016), it seems important to pursue measures that more precisely measure cognitive biases in caregivers' identification of infant affect, separate from their ability or decision to act on or speak about these perceptions during brief dyadic observation tasks. Inspired by this aim and informed by research indicating that disorganized parent-child attachment may reflect a dysfunction in the socialization of fear, sadness, and anger (DeOliveira, et al., 2004), a previous prospective study by the current author tested whether pregnant women's identification of ambiguous infant facial expressions as fear, sadness, and anger (using the brief IFEEL picture task; IFP, Emde, Butterfield, & Osofsky, 1987) might predict infant-mother disorganization at 18 months. Indeed, within a sample of 70 primiparous, at-risk expecting mothers, we found that those who had used fewer 'sad' and more 'angry' labels in identifying the ambiguous infant facial expressions were more likely to go on to have disorganized

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respond to the difficult behavior in the way you described? How do you imagine the child feels when you respond this way?").

attachment relationships with their infant at 18 months. Women who went on to have disorganized attachment relationships with their infants had higher agreement scores with a reference sample in identifying negatively-valenced IFP pictures, and higher levels of betrayal traumatization (i.e. sexual, physical, and/or emotional abuse perpetrated by a very close other, such as romantic partner or close family member) during adulthood. Interestingly, despite extensive literature linking attachment disorganization and fear (as described above in the section on frightened and frightening parental behavior), number of fear labels used did not significantly predict attachment classification. The final predictive model including the statistically significant IFP response variables and other attachment-relevant control variables (including high betrayal trauma in adulthood and household income) explained 51.3% of the variance in secure vs. disorganized attachment, correctly classifying 94.8% of secure and 52.9% of disorganized cases (Bernstein, Tenedios, Laurent, Measelle, & Ablow, 2014).

Interestingly, this study found that observer-coded maternal sensitivity to infant distress measured five months postnatally was not significantly correlated to prenatal biases in infant affect recognition, nor did sensitivity help to explain infant-caregiver attachment (secure vs. disorganized) outcomes in this sample. This finding is consistent with Leerke et al.'s (2016) proposal that cognitive measures are likely more sensitive predictors of attachment risk than behavioral ones, which can fail to detect subtle differences and may also be subject to participant social desirability effects when observational assessments are brief. In general, and because IFP scores represent respondents' interpretations of infant mental states (a cognitive process) separate from any behavioral response to these interpretations, these findings serve to bolster the idea that biases in maternal recognition of infant negative emotion play a role in the development of infant-caregiver attachment disorganization. And as the recognition and naming of affect is

thought to be the first step in emotion regulation (e.g. Gross, 2015), these findings also serve to support DeOliveira and colleagues' position that difficulties with co-regulating negative affect within the caregiver-infant dyad play a role in the development of infant-caregiver attachment disorganization.

While these findings were promising in pointing to emotion recognition biases as an important caregiver cognitive process involved in the development of infant-caregiver attachment, the generalizability of these findings was substantially limited by the strict inclusion criteria utilized in the previous study. In order to understand whether biases in the recognition of infant emotion (and more specifically, the over-identification of infant anger and under-identification of infant sadness) underlie the etiology of infant-caregiver attachment disorganization during the perinatal period more generally, it was imperative that these associations were examined in a less restrictive sample and during a slightly different time interval within the larger perinatal period.

Current Study

The current dissertation aims to expand upon this line of research by testing whether the aforementioned findings generalize beyond the transition to parenthood, and if so, how they relate to established predictors of infant-parent attachment previously unavailable in the Bernstein et al. (2014) study. Importantly, the current study was not intended to serve as a direct replication of previous findings, although such studies are incredibly valuable and the push for demonstrations of direct reproducibility of psychological research has grown tremendously in recent years (see Open Science Collaboration, 2015). Instead, the study design was altered in meaningful ways so that we could test whether previously demonstrated effects within primiparous women transitioning into parenthood would hold for all mothers (primiparous or

multiparous) during the perinatal period more generally. This was an important aim practically speaking when we consider the possible clinical implications for using the IFP as a screening tool. In this context, it becomes very important to determine whether the same perceptual biases in identifying infant affect continue to predict infant-caregiver attachment disorganization when they are measured soon after birth rather than in the third trimester, and whether they also apply to mothers having their second, third, or fourth child. More specifically, the study will address the following two questions using a prospective data set collected for another purpose:

I. Will the aforementioned pattern of findings generalize to a new sample of at-risk mother-infant dyads when (a) mothers are not exclusively primiparous, and (b) predictors are measured 3 months after birth rather than during the third trimester? Because I expect that the previously observed perceptual biases in the recognition of infant emotion play a role in the etiology of infant-caregiver attachment security vs. disorganization not only during the transition from pregnancy to parenthood but throughout the perinatal period both for first time mothers and those with multiple children, I will test the hypotheses that assigning more "angry" labels and fewer "sad" labels to ambiguous infant facial expressions on the IFP will continue to predict subsequent infant-mother disorganized attachment, as will greater response concordance with a normative reference sample in labeling infant expressions as negative in valence.

II. If the above hypothesized effects are also found within the current sample, how will IFP-measured perceptual biases in the identification of ambiguous infant facial expressions relate to established predictors of infant-caregiver attachment—i.e. their unresolved state of mind with respect to trauma and/or loss (as assessed by the AAI)

and caregiving helplessness (as assessed by the CHQ)? While this aim is largely exploratory, I expect that the variance in attachment explained by IFP variables (i.e. number of sad and angry labels and reference-sample concordance in labeling negatively valenced infant facial expressions of affect) will be partially but not completely overlapping with that explained by the established predictors.

As we did in Bernstein et al. (2014), it was important to investigate these associations while also considering at least some of the caregiver experiences believed to contribute to the cognitions and behaviors underlying the development of infant-caregiver attachment. More specifically, in addition to basic demographic variables (including maternal age and household income) we included childhood and adulthood history of trauma (and specifically, interpersonal trauma perpetrated by a very close other) and perinatal trauma symptoms as covariates in all models, both of which are conceptually and empirically relevant to cognition and infant attachment (e.g. Bernier & Meins, 2008; Fisher, 2000; Knezević & Jovancević, 2004; Lyons-Ruth & Block, 1996; Main & Hesse, 1990; van IJzendoorn et al., 1999; Wan & Green, 2009). By controlling for these variables, we anticipated that the primary predictive model would be more interpretable—i.e. by highlighting the effects of caregiver cognitive/perceptual processes independent from the experiences that may contribute to these processes.

CHAPTER III

METHOD

Participants

The present investigation represents a secondary data analysis of data from an ongoing longitudinal prospective study aimed to study the development of infant stress regulation capacities within at-risk mother-infant dyads in a midsized city in the Pacific Northwest. Mothers (n = 91) were recruited during pregnancy and shortly after childbirth from local public-assistance organizations and online community forums. Women were eligible to participate if they were 18 or older, English-speaking, and were expecting or had an infant < 12 weeks old. Those who self-reported having plans to relocate within the year during an initial phone screen were excluded from the study. Written informed consent was obtained from participants, and all protocols were approved by the host university's Office for the Protection of Human Subjects.

At the time of their first assessment (when infants were 12 weeks in age), participating mothers ranged in age from 18 to 44 years (M = 27.01, SD = 5.39). These women were demographically representative of the county in which they resided (76.9% Caucasian, 9.9% Latina, 3.3% African American, 3.3% Asian American, 2.2% Native American, and 4.4% "other"). Almost one-third of the sample (31.9%) reported an annual household income of <$5,000, and 83.4% of <$40,000. A minority (17.6%) of the women had a four-year college degree or higher, while 56.1% attended some college, and 26.4% had a high school degree or less. Most reported that they were married/ in a legal domestic partnership (50.6%) or unmarried but living with a partner (35.2%). Of the remaining participants, 4.4% reported being single, 8.8% reported they were dating, and 1.1% reported they were separated. Participants reported they had first discovered that they were pregnant with the target infant between three and 39

weeks gestation (M = 6.49, SD = 4.76), and slightly over half (55.1%) of participants reported that this pregnancy had been planned. Just under half (48.4%) of the mothers in our sample were first-time mothers, whereas 33.0% had two biological children, 11.0% had three children, and the remaining 7.7% had four or more children.

Procedures

Three-month procedure. Participants (n = 91) and their 12-week old infants were visited in their home for an initial assessment. In the week prior to their home visit, participants were sent a link to an online Qualtrics© survey where they completed a number of self-report questionnaires (those included in the current analyses will be described below). The home visit began with a written consenting and parental consenting process, and included a diagnostic interview and a series of age-appropriate behavioral observations between the mothers and infants. Participants were compensated $20 for this visit.

Within two weeks of their first home visit, a subset of participants (n = 24)[11] participated in a second home visit wherein they completed the structured, 20-question Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985), administered by one of two trained graduate students (Rosemary E. Bernstein or Laura K. Noll). Participants were compensated an additional $20 at the end of this visit. All AAIs were audio recorded and transcribed verbatim according the prescribed standardized conventions by one of six trained undergraduate research assistants under the supervision of the first author. Each completed transcript was then reviewed by a

[11] These participants were selected from the larger sample based on their eligibility and willingness to participate in a neuroimaging portion of this longitudinal investigation. The procedure and results of this neuroimaging analysis is not relevant to the current investigation, but will be discussed in detail in forthcoming papers.

second research assistant to ensure accuracy and redact identifying information from the transcript. These reviewed and redacted transcripts were then coded by one or both of two graduate students (Rosemary E. Bernstein and Laura K. Noll) trained in standard AAI coding (Main & Goldwyn, 1998) by Drs. Mary Main and Erik Hesse in January 2012. Both coders passed the three-part reliability exam, culminating in Spring 2013. Both coders were blind to all other data from the study during the duration of the coding process.

Six-month procedure. Participants (n = 79) and their infants returned to the laboratory for their second visit when their infants were six months of age. During this laboratory assessment, participants engaged in an age-appropriate dyadic observation task, and gave a number of saliva samples to assess physiological markers of stress and arousal. Mothers also completed both pen-and-paper and online questionnaires (including the IFEEL Picture System [Emde, Butterfield, & Osofsky, 1987] and the Caregiving Helplessness Questionnaire [George & Solomon, 2011]; described below) while childcare was provided by a research assistant. Participants were compensated $30 for this laboratory visit.

Twelve-month procedure. Mothers (n = 63) and their infants returned to the laboratory for a third assessment when their infants were 12 months of age. This time point also involved a dyadic observational assessment (i.e. the Strange Situation [Ainsworth & Bell, 1970] discussed below), a series of saliva assays, and online questionnaire completion. While logistic considerations led the researchers to measure attachment within the current study at 12 rather than at 18 months (as was the case in Bernstein et al., 2014), attachment has been shown to be relatively stable from 12-18 months (e.g. Main & Weston, 1981), and therefore this protocol difference across the two studies was not expected to influence the pattern of results. Participants were compensated $30 for this subsequent laboratory visit.

Only those assessments and measures utilized in the current analysis are discussed below. Women who did not return for the 12-month visit (n = 28) were not significantly different from those who did on any variables used in this study.

Three-Month Measures

Trauma history. The Brief Betrayal Trauma Survey (BBTS; Goldberg & Freyd, 2006) is a short questionnaire used to assess the experience of 14 different traumas before and after 18 years of age (see Appendix A for complete list of items). Traumas on the BBTS include those that are low in betrayal (e.g. a natural disaster or automobile accident), medium in betrayal (e.g. being physically, sexually, or emotionally abused by someone with whom the respondent was not close), and high in betrayal (e.g. being abused by someone with whom the respondent was very close). Items from the three betrayal levels (high, medium, and low) are interwoven throughout the measure. Questions avoid using labels for the events and instead describe them. For example, the item measuring high betrayal sexual abuse trauma reads, "you were made to have some form of sexual contact, such as touching or penetration, by someone with whom you were very close (such as a parent or lover)" rather than "you were sexually abused by someone with whom you were very close (such as a parent or lover)." Participants are asked to rate the frequency with which they have experienced each listed trauma on a 3-point scale on a scale of 0 (*never*), 1 (*once or twice*), or 2 (*more than that*). In this study, participants completed the BBTS along with other questionnaires online in the days leading up to their initial home visit. The BBTS has been found have high test-retest reliability over a period of three years (Goldberg & Freyd, 2006).

The BBTS yields six different subscales representing the sum of all items within a given level of betrayal (i.e. low, medium, and high) and each developmental stage (i.e. childhood and

adulthood). In the current sample, alpha reliabilities were calculated at .57 for childhood low betrayal trauma, .70 for childhood medium betrayal trauma, .69 for childhood high betrayal trauma, .34 for adulthood low betrayal trauma, .69 for adulthood medium betrayal trauma, and .71 for adulthood high betrayal trauma. Because the BBTS composite variables represent a count variable, these alphas represent the degree to which traumas of a similar betrayal level tend to co-occur within a given period in development.

Trauma symptoms. The Trauma Symptom Checklist-40 (TSC; Elliot & Briere, 1992) is a widely used 40-item scale that assesses participants' current levels of six kinds of trauma-related symptoms: dissociation, anxiety, depression, sexual abuse trauma index, sleep disturbance, and sexual dysfunction (see Appendix A for complete list of items). Respondents are asked to rate how often they have experienced each symptom in the last two months using a 4-point frequency rating scale ranging from 0 (*never*) to 3 (*often*). In this study, participants completed the TSC along with other questionnaires online in the days leading up to their initial home visit. Total scores (possible range = 0 - 120) were used to represent overall symptomology. Reliability was excellent with a full-scale alpha of .94.

Unresolved state of mind. Unresolved state of mind with regard to trauma and loss was assessed via the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985). Prior research has demonstrated the stability of AAI classifications over time (e.g., Bakermans–Kranenburg & van IJzendoorn, 1993; Benoit & Parker, 1994), and its discriminant validity with respect to intelligence, memory, cognitive complexity, social desirability, and overall social adjustment (Bakermans–Kranenburg, & van IJzendoorn, 1993; Sagi, van IJzendoorn, Scharf, Koren–Karie, Joels, & Mayseless, 1994).

In the current sample, an initial subset of eight AAI transcripts (33%) was selected to establish inter-rater reliability. The inter-rater reliability for participant unresolved state of mind (including unresolved loss, unresolved abuse by a caregiver, and unresolved "other" trauma) was fair, Kappa = 0.31 (p = .001). Inter-rater reliability for participant "overall" unresolved score (i.e. the highest of the above three scores) was similar, Kappa = 0.26 (p = .05). These eight transcripts were conferenced by the two coders at length and final consensus unresolved scores were assigned. In one case where a consensus could not be reached, an expert third coder (Erik Hesse, Ph.D.) was consulted to assign a final score. Because of the relatively low level of initial agreement, two additional transcripts were subsequently (independently) doubly coded. Agreement on these two additional transcripts was excellent (across the two coders, all six individual scores and both overall scores were within one point of each other on the nine-point likert scale), and when reliability was recalculated including these new cases, Kappa increased to 0.36 (p < .001) for the individual scores and 0.38 (p = .004) for the "overall" score.

Six-Month Measures

Infant emotion expression recognition. The IFEEL Picture System (IFP; Emde, Butterfield, & Osofsky, 1987) was administered to measure participants' interpretive biases for infant facial displays of emotion. The IFP asks women to label each of 30 color photographs of 12-month old infant faces using the one feeling word they think best captures the featured infant's experience. In the current study, the IFP photographs were presented to mothers during their laboratory visit as a paper booklet featuring one photo on each page. Participants were asked to advance through the pages one at a time, told to write down the first word that came to mind, and were reassured that there are no right or wrong answers. Participants were encouraged to make their best guess, and though passing photos was permitted, no participant skipped any

item in the current study. Participants recorded their responses in writing on a numbered paper response sheet.

The IFP manual suggests that, "a visual check of the finished score sheet while the mother is still present is helpful to catch any ambiguous or non-feeling words such as 'cute,' 'grunting,' 'wired,' 'overcome.' Occasionally a description of actions rather than feelings is given such as 'hungry,' or 'wants Mom.' This needs clarification. When a first response is unclear the tester can ask the respondent, 'What feeling do you mean by that?' or 'Tell me more about what you mean.' In this way, a more complete set of data can be obtained" (Butterfield, Emde, & Osofsky, 1987, page un-numbered). Accordingly, the research personnel running the laboratory assessment asked women follow up questions to clarify any ambiguous responses. Whenever this was the case, participants' second response was used for coding.

An emotion lexicon developed specifically for the IFP was used to code participants' endorsed labels as belonging to one of 12 distinct emotion categories, including Surprise, Interest, Joy, Content, Passive, Sad, Shy, Shame, Disgust, Anger, Distress, and Fear. The first four of these emotions are considered by the instrument's developers to be positive in valence, while the latter eight are considered to be negative in valence. A thirteenth category ("other") is used to classify non-emotion word responses listed in the lexicon (e.g. adorable, weird, desiring, nauseated, and precious).

A total of 37 (1.56%) participant responses did not appear in the lexicon. When possible, these responses were categorized using close synonyms (e.g. "talkative" for participant response "babble"; "confused" for "stumped"; and "content" for "chilling") or alternate forms of the same word (e.g. "distrustful" for participant response "not trusting"; "attentive" for "attention"; and "dependent" for "dependency"). The remaining responses that did not have a close synonym in

the lexicon were generally ambiguous or non-emotion words (e.g. empathetic, loud, oh, relayed, and unclear), and were placed in the aforementioned "other" category.

For the current study, participant IFP responses were quantified in two different ways: (1) the frequency with which each participant used each of these fourteen emotion categories (e.g. the number of photos [0-30] participants labeled as 'anger'), and (2) participants' level of agreement with a published reference sample (n = 145)[12] in labeling infant facial expressions of emotion as positively or negatively valenced. To calculate these participant-reference sample concordances, we followed the same procedure as described in Bernstein et al., 2014. In short, reference sample responses were used to classify the 30 IFP photographs into three expressed emotion categories: Positive, Negative, or Ambiguous. IFP pictures were classified as positive if 70% or more of the reference sample agreed the infant in the photo was expressing a positive emotion (i.e., surprise, interest, joy, or contentedness), and were classified as negative if 70% or more of the reference sample agreed the infant in the photo was expressing a negative emotion (i.e. passivity, sadness, shyness, shame, disgust, anger, distress, or fear). Photos that did not have at least a 70% agreement on valence were classified as ambiguous. Using these criteria, 10 photos were categorized into each of the three expressed emotion groups. Participant-reference sample agreement in labeling negative and positive emotions was quantified as the number of pictures (0-10) participants identified as having the same valence as did most (i.e. ≥70%) reference sample participants.

[12] Women in this reference sample (mean age = 28.61) were mothers of 3-12 month-old infants (Emde et al., 1987) recruited from five sites throughout Colorado and Kansas and representing a broad range of ages and socio-economic statuses. Reference sample women were primarily Caucasian (93.7%) and middle-class (mean education=14.53 years).

Performance on the IFP has been shown to be reliable over short- and long-term test–retest analyses (Appelbaum, Butterfield, & Culp, 1993), including over the transition to parenthood (Siddiqui, Eisemann, & Hägglöf, 1999). IFP responses have also been shown to be unrelated to current mood (Szajnberg & Skrinjaric, 1993; Zahn-Waxler & Wagner, 1993).

Caregiving helplessness. The Caregiving Helplessness Questionnaire (CHQ; George & Solomon, 2011) is a 26-item questionnaire that assesses maternal caregiving disorganization with respect to a specific child (see Appendix A for complete list of items). The CHQ asks participants to rate their responses according to a 5-point scale from 1 (*not characteristic at all*) to 5 (*very characteristic*). The caregiving helplessness questionnaire contains three subscales: maternal helplessness (i.e. the degree to which the mother feels helpless or unable to take care of her child), mother and child frightened (i.e. the degree to which the mother is frightened by or frightening toward the infant), and child caregiving (i.e. the degree to which the child tries to take care of others). In this study, participants completed the CHQ along with other questionnaires online in the days leading up to their laboratory visit. In the current sample, Cronbach's alpha was .78 for maternal helplessness, .42 for mother and child frightened, and .85 for child caregiving.

Twelve-Month Measures

Infant attachment security. At 12 months postnatal, infant-mother attachment was measured using Ainsworth and Bell's Strange Situation (1970), a 24-minute standardized multi-phased experimental procedure designed to observe and classify infant-caregiver attachment by assessing children's reliance on their caregivers for comfort when distressed. During the task, infant and caregiver are twice separated and reunited, and the infant's attachment behaviors during both reunion episodes are coded for proximity-seeking, contact maintenance, resistance,

and avoidance (Ainsworth & Bell, 1970). A single continuous disorganization score is also assigned to capture infant disorganized behaviors throughout the task. Based on these continuous codes, mother-infant dyads are assigned to one of four primary attachment classifications: secure (B), avoidant (A), resistant (C), or disorganized (D). Those not able to be classified into one of these four classifications are classified as "Cannot Classify." Strange Situation videotapes were sent for expert classification and attachment behavior coding by experienced coder and trainer Elizabeth Carlson, Ph.D. at the University of Minnesota. Because a single expert coder was utilized, no inter-rater reliability data is available for attachment scales or categorization. Dr. Carlson also coded all Strange Situations within the Bernstein et al. (2014) sample. This continuity was thought to diminish the amount of coder-related error across studies.

CHAPTER IV

RESULTS

Missing Data

Prior to analyses, data missingness was addressed. At the first assessment period, nineteen participants had one or more missing values[13] on the TSC. These missing values were imputed as the arithmetic mean of the existing responses and included in the total sum score. Thirteen participants were also missing items[14] on the BBTS; since BBTS composite scales represent a count of different types of traumas (and not an aggregate of multiple questions asking about the same construct), no imputations were made for these missing values. At the second assessment period, seven participants were missing one or more values[15] on the CHQ. These missing values were imputed as the arithmetic mean of the existing responses on the relevant subscale (i.e. mother helpless, mother and child frightened, or child caregiving), and included in the total subscale sum scores.

Descriptives

For descriptive purposes, means and distributions for all IFEEL responses are presented

[13] More specifically, ten participants were missing one item, four were missing two items, two were missing three items, one was missing four items, one was missing six items, and one was missing nine items on the 40-item measure.

[14] More specifically, eight participants were missing one item and five were missing two items on the 28-item measure.

[15] More specifically, six participants were missing one item and one participant was missing two items on the 26-item measure. The participant missing two items was missing values from two different subscales.

in Table 1.

Table 1
Means and Distributions by Subsequent Infant Attachment Classification.

	Secure (*n*=28)		Disorganized (*n*=14)		Complete Sample (*n*=63)		Reference Sample (*n*=145)	
	M	SD	M	SD	M	SD	M	SD
Controls								
Age	29.18	5.95	26.19	4.10	27.01	5.39	28.64	4.83
Income[a]	4.04	2.15	3.12	2.09	3.42	2.10	—	—
CHBT[b]	1.69	1.87	1.06	1.57	1.49	1.75	—	—
AHBT[c]	1.28	2.01	1.14	1.88	1.18	1.68	—	—
TSC[d]	24.83	23.00	19.84	13.53	23.48	17.45	—	—
IFEEL[e]								
Agreement Negative	8.21	1.32	7.94	0.75	8.10	1.14	—	—
Agreement Positive	8.24	1.46	8.29	1.21	8.30	1.36	—	—
Surprise	1.79	1.47	3.12	2.12	2.24	1.77	1.67	1.37
Interest	7.66	3.34	7.59	3.12	6.98	3.49	7.23	3.42
Joy	3.66	1.11	3.35	1.54	3.77	1.44	3.36	1.30
Content	2.48	1.88	2.59	2.48	3.08	2.17	2.82	1.54
Passive	2.07	1.77	2.00	2.06	2.32	2.35	1.12	1.35
Sad	2.41	1.76	2.88	2.18	2.68	2.10	3.75	2.31
Shy	3.03	2.35	2.18	1.91	2.59	2.12	2.46	2.03
Guilt/Shame	0.00	0.00	0.06	0.24	0.04	0.19	0.13	0.41
Disgust	0.14	0.35	0.18	0.39	0.15	0.40	0.27	0.74
Anger	1.21	1.37	1.53	1.91	1.43	1.61	1.88	1.67
Distress	2.59	1.68	2.65	1.87	2.51	1.77	2.22	1.94
Fear	1.83	2.12	1.00	1.66	1.24	1.69	1.94	1.35
Other	1.14	1.62	0.88	1.32	0.96	1.48	0.81	1.21
No Response	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.92
CHQ[f]								
Mother Helpless	7.86	2.01	8.54	2.09	8.43	2.51	—	—
M/C Frightened	7.86	2.00	7.82	1.47	8.08	2.13	—	—
Child Caregiving	17.03	7.03	17.47	5.99	16.59	6.11	—	—
Unresolved SOM[g]	2.00	1.81	3.75	2.5	3.09	2.29	—	—
Strange Situation[h]								
Disorganization	2.24	1.38	6.12	0.93	3.42	2.01	—	—

Note: Fields shaded in dark gray indicate significant differences ($p < .05$) from the reference sample. Fields shaded in light gray indicate marginally significant differences ($p < .10$).

[a] Household Income: 1= < $5,000; 2= $5,000 - $9,999; 3= $10,000 - $19,999; 4= $20,000 - $29,999; 5= $30,000 - $39,999; 6= $40,000 - $49,999; 7= $50,000 - $74,999; 8= $75,000 - $99,999; 9= >$100,000 [b] Childhood High Betrayal Traumatization (Brief Betrayal Trauma Survey; Goldberg & Freyd, 2006) [c] Adulthood High Betrayal Traumatization (Brief Betrayal Trauma Survey; Goldberg & Freyd, 2006) [d] Trauma Symptom Checklist (Trauma Symptom Checklist-40; Briere & Runtz, 1989) [e] IFEEL Picture Task

(Emde, Butterfield, & Osofsky, 1987) [f] Caregiving Helplessness Questionnaire (George & Solomon, 2011) [g] Unresolved State of Mind (Adult Attachment Interview; George, Kaplan, & Main, 1985) [h] Strange Situation (Ainsworth & Bell, 1970).

We found that the current sample differed from the normative reference sample in multiple ways. More specifically, the current sample at large assigned significantly more surprise ($t = 2.49$, $p = .01$) and joy ($t = 2.11$, $p = .04$) labels, and fewer sad ($t = -3.52$, $p < .001$), guilt/shame ($t = -2.24$, $p = .03$), and fear ($t = -3.17$, $p = .002$) labels to the IFP photographs than the reference sample participants. They also skipped items less often ($t = -4.58$, $p < .001$), and assigned marginally fewer angry labels ($t = -1.97$, $p = .05$). When examining reference-sample vs. current sample divergences by attachment pattern (secure vs. disorganized), it emerged that in addition to leaving fewer items blank ($t = -4.58$, $p < .001$), mothers who went on to have disorganized attachment relationships with their infants saw more surprise ($t = 2.75$, $p = .01$) and less fear ($t = -2.25$, $p = .04$) in the IFP photos than the reference sample had. Mothers who went on to have a secure attachment relationship with their infant left fewer items blank ($t = -4.58$, $p < .001$) and also saw more passivity ($t = 2.74$, $p = .01$), less sadness ($t = -3.54$, $p < .001$), less guilt/shame ($t = -3.82$, $p < .001$), less anger ($t = -2.31$, $p = .03$), and marginally less disgust ($t = -1.45$, $p = .07$) than the reference sample had.

Descriptives of and intercorrelations between focal variables are presented in Table 2.

Table 2
Intercorrelations

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Age	–	.43**	-.05	.11	-.15	.03	-.10	.18	-.21	.04	.09	-.00	-.09	.08	-.11
2. Income[a]	.50**	–	-.22	-.17	-.26	.27^	-.23	.12	-.12	.17	-.02	-.14	-.43**	-.51^	-.15
3. CHBT[b]	-.22	-.10	–	.55**	.48**	-.06	.14	-.04	-.08	.09	.26^	.10	.11	.40	-.20
4. AHBT[c]	.02	-.00	.40**	–	.69**	.14	.17	-.07	-.14	-.05	.35*	.08	.09	.23	-.12
5. TSC[d]	-.20	-.16	.29*	.63**	–	.13	.15	-.11	-.13	-.02	.54**	.01	-.03	.51^	-.26^
6. IFP[e] Agreement Negative	-.19	.06	-.17	.10	.05	–	-.05	.15	.13	.35*	.18	.21	-.03	.11	-.10
7. IFP[e] Agreement Positive	.10	-.08	.03	-.01	.01	-.19	–	-.01	-.29*	-.39**	.12	.22	.27^	.03	.20
8. Sad[e]	.06	.13	-.10	-.06	-.25^	.18	-.29*	–	-.13	.06	.04	-.11	-.00	.37	.21
9. Anger[e]	-.25^	-.23	-.09	-.14	-.14	.06	-.17	-.03	–	-.01	-.19	-.13	.07	.21	.10
10. Fear[e]	.15	.09	.10	.03	-.02	.26^	-.17	.12	-.05	–	-.06	.01	-.22	-.13	-.29*
11. Mother Helpless[f]	.02	.00	-.07	.06	.24	.10	-.07	-.06	.03	-.09	–	.09	.10	.45	.01
12. M/C Fright[f]	-.17	-.23	.24^	-.03	-.01	.01	.17	-.06	-.06	.04	.33*	–	.14	.09	-.04
13. Child Caregive[f]	-.15	-.48**	.04	-.08	-.14	.18	.17	.04	.02	-.12	-.00	.10	–	.39	-.00
14.U/d SOM[g]	-.29	-.35	.48^	.09	.26	-.26	-.12	.14	.21	-.05	.13	.07	-07	–	.25
15. SS[h] Disorgan-ization	.04	-.10	-.21	-.13	-.23	-.08	.04	.19	.11	-.18	.12	-.05	-.04	.34	–

Note: Bottom right (shaded) is for complete sample with Strange Situation data (n = 63); Upper left (unshaded) is for only the participants with infants classified as having a secure (B) or disorganized (D) attachment relationship (n = 38).
** $p < .001$, * $p < .05$, ^ $p < .1$

[a] Household Income: 1= < $5,000; 2= $5,000 - $9,999; 3= $10,000 - $19,999; 4= $20,000 - $29,999; 5= $30,000 - $39,999; 6= $40,000 - $49,999; 7= $50,000 - $74,999; 8= $75,000 - $99,999; 9= >$100,000 [b] Childhood High Betrayal Traumatization (Brief Betrayal Trauma Survey; Goldberg & Freyd, 2006) [c] Adulthood High Betrayal Traumatization (Brief Betrayal Trauma Survey; Goldberg & Freyd, 2006) [d] Trauma Symptom Checklist (The Trauma Symptom Checklist-40; Briere & Runtz, 1989) [e] IFEEL Picture Task (Emde, Butterfield, & Osofsky, 1987) [f] Caregiving Helplessness Questionnaire (George & Solomon, 2011) [g] Unresolved State of Mind (Adult Attachment Interview; George, Kaplan, & Main, 1985) [h] Strange Situation (Ainsworth & Bell, 1970).

Attachment classifications. Of the 63 mother-infant dyads in our sample with coded Strange Situation tapes, six (9.5%) were coded with a primary classification of Avoidant, 29 (46.0%) were coded with a primary classification of Secure, six (9.5%) were coded with a

primary classification of Resistant, 17 (28.0%) were coded with a primary classification of Disorganized, and five[16] (7.9%) were coded with a primary classification of "Cannot Classify." This rate of attachment security is lower than the 67% found in Bernstein et al. (2014), and the rate of attachment disorganization is slightly higher than 20% found in Bernstein et al. (2014) and in other low SES samples (25%; see van IJzendoorn et al., 1999). Of the 17 infants in the current sample classified as having a disorganized attachment relationship with their mothers, five (29.4%) were assigned an alternate classification of secure, 12 (70.6%) were assigned an alternate classification of resistant, and none (0%) were assigned an alternate classification of avoidant or "cannot classify." These proportions were quite different from those which the author found in Bernstein et al. (2014), wherein six (33.3%) of the 18 disorganized infants were given an alternate classification of avoidant, six (33.3%) were given an alternate classification of secure, and six (33.3%) were given an alternate classification of resistant.

Adult Attachment Interview/ Strange Situation concordance. For the small subset of the sample with completed AAIs, state of mind scores, including unresolved state of mind, were examined alongside infant-caregiver attachment classifications. Among mothers within this subset whose infants went on to be classified as having a secure infant-mother attachment relationships, five (50%) were classified as Autonomous, three (30%) as Dismissive, one (10%)

[16] Of the five dyads classified as "Cannot Classify," one was classified as such due to a lack of a clear view of the infant during reunion, two others were classified as such due to the mother nursing and an inability for the coder to determine classification based on emotion regulation, one was classified as such due to procedural intereference wherein the stranger continued to interact with the child during the reunion, and one was classified as such due to a likely neurological source of the observed infant disordered behavior.

as Preoccupied, and one (10%) as Unresolved. Among mothers within this subset whose infants went on to be classified as having a disorganized infant-mother attachment relationships, one (25%) was classified as Autonomous, one (25%) as Dismissive, one (25%) as Preoccupied, and one (25%) as Unresolved. The correlation between the continuous disorganized and unresolved scores across all dyads with both coded AAIs and SS tapes (n = 19) was r = .27, p = . 27, *ns*.

Hypothesis testing

Logistic regression analyses were performed to determine whether the current authors' previously reported findings (Bernstein et al., 2014) would persist in a new sample. Namely, I tested whether, after controlling for the same maternal demographic and attachment-relevant variables (i.e. maternal age, household income, childhood and adulthood high betrayal trauma history, and current trauma-related symptoms), infant attachment classification (secure [coded 0] vs. disorganized [coded 1]) would be predicted by mothers' concordance with a normative reference sample in identifying negative IFP pictures, and by their endorsement rates of sadness and anger. All variables were mean-centered. These initial categorical analyses utilized 38 of the 46 mother-infant dyads with a Secure (B) or Disorganized (D) attachment relationship classification, as those were the dyads who had complete data for all other variables excluding unresolved state of mind. This group (24 B and 14 D dyads) comprised our sample for the following logistic regressions. For a summary of the sample sizes used in estimating all subsequent regressions, see Table 3 below.

Table 3
Summary of Sample Sizes Used in Fitting Regression Models.

Model	Description	N	Reason for N
1	Logistic Regression: Controls- Only	38	B or D SS classification; complete control variable data
2	Logistic Regression: Full (with IFP)	38	B or D SS classification; complete control variable + IFP data
3	Logistic Regression: Expanded (with CHQ)	38	B or D SS classification; complete control variable + IFP + CHQ data
4	Logistic Regression: Abridged (with significant/trending predictors)	46	B or D SS classification; complete CHQ data
5	Linear Regression: Controls- Only	54	Coded SS; complete control variable data
6	Linear Regression: Full (with IFP)	54	Coded SS; complete control variable + IFP data
7	Linear Regression: Expanded (with CHQ)	54	Coded SS; complete control variable + IFP + CHQ data
8	Linear Regression: Expanded (with CHQ and AAI Unresolved)	19	Coded SS; complete control variable + IFP + CHQ + AAI data
9	Linear Regression: Abridged (with significant/trending predictors)	57	Coded SS; complete trauma symptom and income data

Note: SS = Strange Situation (Ainsworth & Bell, 1970); B = Secure; D = Disorganized.

I utilized the same iterative model-building procedure used by Bernstein et al. (2014) by testing an initial full model (containing all five control variables[17] followed by the five IFP

[17] The only difference was that observer-coded maternal sensitivity at five months postnatal was not included in the current sample as it was not available. Maternal sensitivity during the reunion episode of the Still Face Paradigm (Tronick, Als, Adamson, Wise, & Brazelton, 1978) at six months postnatal may be available in the future.

variables) against a controls-only model. This pair of models was calculated using data from 38 dyads (i.e. the 24 secure and 14 disorganized with complete IFP and control variable data). Unlike in Bernstein et al. (2014), the full model was not significantly better at predicting infant-mother attachment classification, $\chi^2(5)=2.74$, $p=.74$, *ns*, and explained 22.6% of the variance in secure vs. disorganized attachment classification. This was only slightly higher than the 14.1% explained by the controls-only model. The controls-only model correctly classified 79.2% (19 of 24) of secure dyads and 35.7% (5 of 14) of disorganized dyads (total correct classification rate = 63.2%). The full model correctly classified 87.5% (21 of 24) of secure dyads and 50% (7 of 14) of disorganized dyads (total correct classification rate = 73.7%).[18] Inspection of the individual parameter estimates (Table 4) revealed that no control or IFP variable reached or trended toward significance in either the controls-only or full model.

[18] In Bernstein et al. (2014), this full model (including all the same variables and postnatal sensitivity) correctly classified 94.3% (50 of 53) of secure cases and 70.6% (12 of 17) of disorganized cases, for a total correct classification rate of 75.7%.

Table 4

Summary of Logistic Regression Analysis for Control and IFP Variables Predicting Infant-Mother Attachment Classification (secure-disorganized)

	B	*SE B*	Wald	*p*	e^B
Controls-Only Model					
Age	-.07	.08	0.80	.37	0.93
Income[a]	-.18	.21	0.74	.39	0.83
CHBT[b]	-.26	.25	1.05	.31	0.77
AHBT[c]	.28	.29	0.93	.34	1.32
TSC[d]	-.02	.03	0.62	.43	0.98
Full Model					
Age	-.13	.10	1.72	.19	0.88
Income[a]	-.07	.24	0.09	.76	0.93
CHBT[b]	-.25	.29	0.73	.39	0.78
AHBT[c]	.38	.32	1.39	.24	1.46
TSC[d]	-.03	.03	0.72	.40	0.98
Agreement Negative[e]	-.06	.41	0.02	.88	0.94
Agreement Positive[e]	-.24	.39	0.39	.53	0.79
Sad[e]	.21	.25	0.69	.41	1.23
Anger[e]	.07	.30	0.05	.83	1.07
Fear[e]	-.33	.28	1.43	.23	0.72

[a] Household Income: 1= < $5,000; 2= $5,000 - $9,999; 3= $10,000 - $19,999; 4= $20,000 - $29,999; 5= $30,000 - $39,999; 6= $40,000 - $49,999; 7= $50,000 - $74,999; 8= $75,000 - $99,999; 9= >$100,000 [b] Childhood High Betrayal Traumatization (Brief Betrayal Trauma Survey; Goldberg & Freyd, 2006) [c] Adulthood High Betrayal Traumatization (Brief Betrayal Trauma Survey; Goldberg & Freyd, 2006) [d] Trauma Symptom Checklist (The Trauma Symptom Checklist-40; Briere & Runtz, 1989) [e] IFEEL Picture Task (Emde, Butterfield, & Osofsky, 1987)

Next, we compared the above full model to an extended version that also included the three caregiver helplessness variables.[19] This model was also estimated using data from the same 38 dyads. This model predicted marginally more variance in infant-mother attachment classification, $\chi^2(3)=7.19$, $p=.07$, and explained 42.3% of the variance in secure vs. disorganized

[19] Due to the very small number of coded AAIs, this categorical analysis required we exclude overall unresolved score from the analysis.

attachment classification. The model correctly classified 79.2% (19 of 24) of secure dyads and 78.6% (11 of 14) of disorganized dyads (total correct classification rate = 78.9%). Examination of the individual parameter estimates (Table 5) revealed that maternal helplessness significantly predicted attachment classification, and that once the CHQ variables were included in the model, maternal age, total trauma symptoms, and betrayal traumatization in adulthood trended toward significance.

Table 5

Summary of Logistic Regression Analysis for Expanded Model Predicting Infant-Mother Attachment Classification (secure-disorganized)

	B	*SE B*	Wald	*p*	e^B
Expanded Model					
Age	-.26	.14	3.40	.07	0.77
Income[a]	-.19	.28	0.47	.49	0.83
CHBT[b]	-.45	.39	1.35	.25	0.64
AHBT[c]	.76	.45	2.95	.09	2.15
TSC[d]	-.11	.06	3.75	.05	0.89
Agreement Negative[e]	-.33	.61	0.30	.58	0.72
Agreement Positive[e]	-.28	.51	0.30	.59	0.76
Sad[e]	.41	.33	1.57	.21	1.51
Anger[e]	.03	.37	0.05	.94	1.03
Fear[e]	-.36	.35	1.06	.30	0.70
Maternal Helplessness [f]	.72	.33	4.78	.03	2.06
Mother/Child Frightened [f]	.08	.26	0.09	.76	1.08
Child Caregiving [f]	-.06	.08	0.49	.49	0.94

[a] Household Income: 1= < $5,000; 2= $5,000 - $9,999; 3= $10,000 - $19,999; 4= $20,000 - $29,999; 5= $30,000 - $39,999; 6= $40,000 - $49,999; 7= $50,000 - $74,999; 8= $75,000 - $99,999; 9= >$100,000 [b] Childhood High Betrayal Traumatization (Brief Betrayal Trauma Survey; Goldberg & Freyd, 2006) [c] Adulthood High Betrayal Traumatization (Brief Betrayal Trauma Survey; Goldberg & Freyd, 2006) [d] Trauma Symptom Checklist (The Trauma Symptom Checklist-40; Briere & Runtz, 1989) [e] IFEEL Picture Task (Emde, Butterfield, & Osofsky, 1987) [f] Caregiving Helplessness Questionnaire (George & Solomon, 2011)

A final abridged model including only those four variables from the above expanded

model that reached or trended toward significance was marginally significant in predicting infant-mother secure vs. disorganized attachment, $\chi^2(4)=7.76$, $p=.10$, and explained 25.2% of the variance in attachment outcome. This final model (which was also estimated using data from 38 dyads) correctly classified 75.0% (18 of 24) of secure dyads and 42.9% (6 of 14) of disorganized dyads (total correct classification rate = 63.2%). Examination of the individual parameter estimates (Table 6) revealed that maternal helplessness continued to significantly predict attachment classification and maternal age and total trauma symptoms continued to trend toward significance. Adult high betrayal trauma history, however, fell to non-significance.

Table 6
Summary of Logistic Regression Analysis for Abridged Model Predicting Infant-Mother Attachment Classification (secure-disorganized)

	B	*SE B*	Wald	*p*	e^B
Age	-.17	.09	3.76	.05	0.84
AHBT [a]	.35	.31	1.26	.26	1.41
TSC [b]	-.08	.04	3.69	.06	0.92
Maternal Helplessness [c]	.54	.26	4.47	.03	1.72

[a] Adulthood High Betrayal Traumatization (Brief Betrayal Trauma Survey; Goldberg & Freyd, 2006) [b] Trauma Symptom Checklist (The Trauma Symptom Checklist-40; Briere & Runtz, 1989) [c] Caregiving Helplessness Questionnaire (George & Solomon, 2011)

A final model with only maternal helplessness (estimated with data from 46 dyads with complete CHQ data) was not significant in predicting infant classification, $\chi^2(1)=1.17$, $p=.28$, and explained just 3.4% of the variance in attachment outcome. This abridged model correctly classified 96.6% (28 of 29) of secure dyads and 11.8% (2 of 17) of disorganized dyads (total correct classification rate = 65.2%). Parameter estimates revealed that maternal helplessness was non-significant, $B = .16$, Wald = 1.11, $p = .29$, *ns*.

Additional Analyses

Post-hoc exploratory analyses of group (secure vs. disorganized) differences across all

control, IFP, and established predictors of infant-caregiver attachment (i.e. CHQ variables and unresolved state of mind) revealed that within this current sample, the only significant difference was for surprise, $t(44)= -2.50$, $p=.02$; mothers who went on to have a disorganized attachment relationship with their infant reported seeing more surprise in the IFP infant emotion face photographs ($M = 3.12$, $SD = 2.12$) than those who went on to have a secure attachment relationship ($M = 1.79$, $SD = 1.47$).

Continuous approach. Next, an analogous model-building strategy was employed to re-test these associations using a continuous outcome measure of infant-caregiver disorganization rather than the above binary categorical outcome. This approach is consistent with a growing preference within the field for dimensional approaches to the measurement of attachment over traditional categorical approaches (e.g. Roisman, Fraley, & Belsky, 2007), and enabled detection of possible linear effects that may have been previously obscured by categorization. This continuous analytic approach also allowed for increased statistical power via a larger sample.

We followed the same protocol as above by testing an initial full model (containing all five control variables followed by the five IFP variables) against a controls-only linear regression model predicting infants' continuous disorganization scores. This pair of models contained data from 54 dyads with complete available data. The full model was not significantly better at predicting infant-mother disorganization, $F\Delta(5,43) = 0.47$, $p =.78$, *ns*, and explained 17.4% of the variance in disorganization (vs. 12.7% in the controls-only model). Examination of parameter estimates (Table 7) revealed that no control or IFP variable reached significance, though trauma symptomology trended toward significance, $B = -.34$ $t = -1.91$, $p = .06$.

Table 7

Summary of Linear Regression Analysis for CHQ Variables Predicting Infant-Mother Attachment Disorganization

	B	SE	*B*	*t*	*p*
Controls-Only Model					
Age	.03	.06	.08	0.46	.65
Income[a]	-.26	.16	-.27	-1.64	.11
CHBT[b]	-.14	.18	-.12	-0.77	.45
AHBT[c]	.26	.24	.20	1.11	.28
TSC[d]	-.04	.02	-.31	-1.89	.07
Full Model					
Age	.03	.07	0.09	0.47	.64
Income[a]	-.24	.17	-0.25	-1.37	.18
CHBT[b]	-.10	.20	-0.09	-0.49	.63
AHBT[c]	.24	.25	0.18	0.95	.35
TSC[d]	-.04	.02	-0.34	-1.91	.06
Agreement Negative[e]	.22	.29	0.13	0.76	.45
Agreement Positive[e]	.11	.24	0.07	0.46	.65
Sad[e]	.02	.16	0.02	0.12	.91
Anger[e]	.04	.22	0.03	0.20	.84
Fear[e]	-.19	.17	-0.17	-1.10	.28

[a] Household Income: 1= < $5,000; 2= $5,000 - $9,999; 3= $10,000 - $19,999; 4= $20,000 - $29,999; 5= $30,000 - $39,999; 6= $40,000 - $49,999; 7= $50,000 - $74,999; 8= $75,000 - $99,999; 9= >$100,000 [b] Childhood High Betrayal Traumatization (Brief Betrayal Trauma Survey; Goldberg & Freyd, 2006) [c] Adulthood High Betrayal Traumatization (Brief Betrayal Trauma Survey; Goldberg & Freyd, 2006) [d] Trauma Symptom Checklist (The Trauma Symptom Checklist-40; Briere & Runtz, 1989) [e] IFEEL Picture Task (Emde, Butterfield, & Osofsky, 1987)

In the next step, we tested the above full model against an expanded model containing the additional three CHQ variables. This model was also estimated using data from the same 54 dyads. The expanded model including CHQ variables was not significantly better at predicting infant-mother disorganization, $F\Delta(3,40) = 1.08$, $p = .37$, *ns*, and explained 23.6% of the variance in disorganization. Examination of the parameter estimates (Table 8) revealed that no CHQ variable reached or trended toward significance, but when they were added to the model,

household income trended toward significance, B = -.36 t = -1.82, p = .08.

Table 8

Summary of Linear Regression Analysis for Expanded Model Predicting Infant-Mother Attachment Disorganization

	B	SE	*B*	*t*	*p*
Age	.03	.07	0.08	0.42	.68
Income[a]	-.34	.19	-0.36	-1.82	.08
CHBT[b]	-.05	.20	-0.04	-0.24	.82
AHBT[c]	.25	.26	0.19	0.97	.34
TSC[d]	-.06	.03	-0.46	-2.02	.05
Agreement Negative[e]	.27	.30	0.15	0.89	.38
Agreement Positive[e]	.23	.25	0.15	0.90	.38
Sad[e]	.02	.16	0.02	0.10	.92
Anger[e]	.07	.22	0.05	0.33	.74
Fear[e]	-.18	.17	-0.17	-1.06	.30
Maternal Helplessness[f]	.18	.18	0.23	1.02	.31
Mother/Child Frightened[f]	-.15	.16	-0.16	-0.93	.36
Child Caregiving[f]	-.07	.06	-.022	1.31	.20

[a] Household Income: 1= < $5,000; 2= $5,000 - $9,999; 3= $10,000 - $19,999; 4= $20,000 - $29,999; 5= $30,000 - $39,999; 6= $40,000 - $49,999; 7= $50,000 - $74,999; 8= $75,000 - $99,999; 9= >$100,000 [b] Childhood High Betrayal Traumatization (Brief Betrayal Trauma Survey; Goldberg & Freyd, 2006) [c] Adulthood High Betrayal Traumatization (Brief Betrayal Trauma Survey; Goldberg & Freyd, 2006) [d] Trauma Symptom Checklist (The Trauma Symptom Checklist-40; Briere & Runtz, 1989) [e] IFEEL Picture Task (Emde, Butterfield, & Osofsky, 1987) [f] Caregiving Helplessness Questionnaire (George & Solomon, 2011)

In the next step of our iterative model-building procedure, the above model was tested again after adding maternal overall unresolved scores to the model. Because the AAI was available for a small subset of our overall sample, this model was fit using a small number of participants (n = 19). Overall, this model, F(4, 14) = 1.14, p = .50, *ns* did not significantly predict

disorganization, though R^2 was quite high at .80.[20] Parameter estimates revealed that overall unresolved score did not predict continuous disorganization scores, $B = .57$, $t = 1.39$, $p = .24$, *ns*. In fact, parameter estimates revealed that no variable reached significance, though reference-sample concordance in labeling positively-valenced IFP photos ($B = .81$, $t = 2.57$, $p = .06$) and high betrayal traumatization in childhood ($B = -1.69$, $t = -2.34$, $p = .08$) trended toward significance.

A final abridged model including only the two variables from the expanded model that reached or trended toward significance was marginally significant in predicting infant-mother disorganization, $F(2,54)=2.43$, $p =.10$, and explained 8.3% of the variance in attachment disorganization. This model was estimated using data from 57 dyads. Examination of the individual parameter estimates revealed that maternal trauma symptoms continued to trend toward significance ($B = -.25$, $t = -1.87$, $p = .07$) while income fell to non-significance ($B = -.21$, $t = -1.55$, $p = .13$).

Sample comparisons. Finally, to better understand differences between the current sample and our previous sample (Bernstein et al., 2014) which may have contributed to the differences in reported findings, we ran exploratory t-tests comparing control variables and IFP responses across the two samples (Table 9).

[20] For comparison purposes, the above linear regressions were also run using only this smaller subsample with coded AAIs ($n = 19$). All three models were non-significant in predicting disorganization overall, and the variance explained by each (i.e. R^2) were 14.4% for the controls-only model, 46.4% for the controls plus IFP model; and 70.3% for the model containing control, IFP, and CHQ variables.

Table 9

Means and Distributions by Future Infant Attachment Classification for Current Sample Compared to Sample Reported by Bernstein et al. (2014).

	Secure					Disorganized				
	Current Sample (*n*=24)			Previous Sample (*n*=53)		Current Sample (*n*=14)			Previous Sample (*n*=17)	
	M	SD		M	SD	M	SD		M	SD
Controls										
Age	29.18	5.95	*	24.32	4.12	26.19	4.10		24.00	4.56
Income[a]	4.04	2.15		3.36	.98	3.12	2.09		3.00	1.58
CHBT[b]	1.69	1.87		1.06	1.31	1.06	1.57		1.35	1.41
AHBT[c]	1.28	2.01	+	.60	.97	1.14	1.88		1.29	1.36
TSC[d]	24.83	23.00		20.43	10.96	19.84	13.53	+	27.88	11.77
IFEEL[e]										
Agreement	8.21	1.32		7.90	1.18	7.94	0.75	+	8.56	1.10
Negative										
Agreement Positive	8.24	1.46		7.73	1.39	8.29	1.21		7.44	1.72
Surprise	1.79	1.47		1.92	1.48	3.12	2.12	*	1.83	1.15
Interest	7.66	3.34		6.64	3.27	7.59	3.12		6.06	2.41
Joy	3.66	1.11		3.24	1.48	3.35	1.54		2.94	1.35
Content	2.48	1.88		2.90	1.96	2.59	2.48		2.67	1.61
Passive	2.07	1.77		1.51	1.30	2.00	2.06		2.17	1.65
Sad	2.41	1.76	+	3.20	1.75	2.88	2.18		2.11	1.41
Shy	3.03	2.35		3.05	2.16	2.18	1.91		3.00	1.68
Guilt/Shame	0.00	0.00	*	0.10	0.30	0.06	0.24		0.11	0.32
Disgust	0.14	0.35		0.08	0.34	0.18	0.39		0.28	0.67
Anger	1.21	1.37		1.24	1.22	1.53	1.91		2.39	1.42
Distress	2.59	1.68		2.20	1.44	2.65	1.87		2.67	1.57
Fear	1.83	2.12		1.51	1.59	1.00	1.66		1.41	1.28
Other	1.14	1.62	*	2.12	2.47	0.88	1.32	+	1.67	1.33
No Response	0.00	0.00	*	0.22	0.67	0.00	0.00	+	0.28	0.57

Note: Fields shaded in dark gray indicate significant differences ($p < .05$). Fields shaded in light gray indicate marginally significant differences ($p < .10$).

[a] Household Income: 1= < $5,000; 2= $5,000 - $9,999; 3= $10,000 - $19,999; 4= $20,000 - $29,999; 5= $30,000 - $39,999; 6= $40,000 - $49,999; 7= $50,000 - $74,999; 8= $75,000 - $99,999; 9= >$100,000 [b] Childhood High Betrayal Traumatization (Brief Betrayal Trauma Survey; Goldberg & Freyd, 2006) [c] Adulthood High Betrayal Traumatization (Brief Betrayal Trauma Survey; Goldberg & Freyd, 2006) [d] Trauma Symptom Checklist (The Trauma Symptom Checklist-40; Briere & Runtz, 1989) [e] IFEEL Picture Task (Emde, Butterfield, & Osofsky, 1987)

In terms of the attachment-relevant control variables, we found that the current

subsample of mothers with securely attached infants was significantly older (M = 29.18, SD = 5.95) than those in the original sample (n = 53; M = 24.32, SD = 4.12), t = 3.92, p < .001. We also detected marginally significant differences in the amount of adult high betrayal traumatization between mothers of secure infants across the two samples (with those in the current sample reporting more trauma than those in the previous sample; t = 1.72, p = .09), and in the trauma symptoms between mothers of disorganized infants across the two samples (with those in the current sample reporting fewer symptoms than those in the previous sample; t = -1.85, p = .07).

In terms of the IFP responses, we found that compared to their counterparts in the original sample, the current subsample of mothers with securely attached infants labeled fewer pictures with words falling into the 'guilt/shame' (0.00 [0.00] vs. 0.10 [0.30], t = -2.43, p = .02), 'other' (1.14 [1.62] vs. 2.12 [2.47], t = -2.16, p = .03), and 'no response' categories (0.00 [0.00] vs. 0.22 [0.67], t = -2.39, p = .02). The difference between these two groups in the number of 'sad' labels used also trended toward significance (t = -2.43, p = .02), with the current subsample using the label less often than the previous sample (2.41 [1.76] vs. 3.20 [1.75]). Compared to their counterparts in the original sample, the current subsample of mothers with disorganized infants labeled more pictures with words falling into the 'surprised' category (3.12 [2.12] vs. 1.83 [1.15], t = 2.21, p = .04). The difference between these two groups in the number of 'other' labels used (0.88 [1.32] vs. 1.67 [1.33], t = -1.74, p = .09) and number of items left without a response (0.00 [0.00] vs. 0.28 [0.57], t = -2.03, p = .06) also trended toward significance, with the current sample endorsing fewer of each. Also trending toward significance was the difference in reference-sample concordance in labeling negatively valenced pictures, with the current subsample earning lower concordance scores (M = 7.94, SD = 0.75) than those in the previous

sample (M = 8.56, SD = 1.10), t = -1.92, p = .07.

CHAPTER V

DISCUSSION

The current dissertation aimed to extend previously published longitudinal results by the author (Bernstein et al., 2014) highlighting the importance of caregivers' cognitive biases in recognizing infant facial displays of anger and sadness in the etiology of infant-caregiver disorganized attachment. In an effort to understand whether our previously found effects generalized to a less restrictive perinatal population, I tested the hypothesis that mothers' perceptual biases measured at 6-months postpartum (vs. in the third trimester) would predict attachment measured at 12-months postpartum (vs. 18 months) in a sample of at-risk mothers (vs. at-risk first time mothers)—in particular, that compared to those women who went on to have a secure attachment relationship with their infant, those who went on to have a disorganized attachment relationship would see more anger and less sadness in photos of ambiguous infant facial expressions, and would also have higher rates of reference sample concordance in identifying negatively-valenced expressions. I also planned to examine how these perceptual biases relate to established predictors of infant-caregiver attachment security vs. disorganization, including caregiving helplessness and unresolved state of mind with regard to loss and/or trauma.

Preliminary descriptive analyses revealed that the current sample yielded slightly higher than typical proportions of infant-mother attachment disorganization and moderately lower proportions of infant-mother attachment security. We also found lower than expected concordances across infant-caregiver attachment classification and caregiver state of mind with regard to attachment. More specifically, 50% of mothers of securely attached infants were deemed secure autonomous (versus 69.2% as reported in the recent meta-analysis by Verhage et al., 2016), and only 25% of mothers of disorganized infants were deemed Unresolved (42.4% as

reported by Verhage et al., 2016). Because the subset of the current sample with coded AAIs was so small (especially for mothers of infants with a disorganized attachment; $n = 4$), much caution must be exercised in interpreting these lower concordances. That said, these findings are somewhat consistent with Verhage and colleagues' (2016) findings that the concordances in caregiver-infant attachment classification are more modest than they originally appeared to be, and that risk-status of the population moderated the intergenerational transmission of Autonomous-secure attachment, with high-risk samples exhibiting less concordance across generations. In general, this trend for decreased concordance raises the possibility that the AAI and/or Strange Situation procedures and coding protocols reflect cohort-specific phenomena (e.g. ways of speaking; ways of interacting) that have become less relevant to younger generations in the decades since these tools were first created and normed with middle-class samples. As such, these classic instruments may greatly benefit from thoughtful modifications that make them more appropriate for a broader range of risk status, and adjust for changing societal norms.

Regarding our main hypothesis testing, counter to my hypothesis and the title of this dissertation, prior findings did not generalize in this new population, with neither the previously significant attachment-relevant control variable (i.e. adult high betrayal traumatization) nor the focal IFP variables (i.e. number of sad labels used, number of angry labels used, and reference-sample concordance in labeling negatively-valenced photographs) predicting subsequent infant-caregiver disorganized versus secure attachment. This was true whether the outcome variable was examined categorically or continuously.

There are numerous reasons why the current study failed to detect the same pattern of results. First, we cannot discount the possibility that the previously reported findings (Bernstein et al., 2014) were the result of type I error. In this case, we would not expect the findings to

replicate to other samples, whether these samples were highly similar or more dissimilar. [21] Alternatively, it could be that our prior results were not found in error, but reflect a more population-specific phenomenon and thus do not replicate outside samples of primiparous and/ or pregnant women. Women who have not yet had their child may have a different experience completing the IFP than those who already having at least one child, perhaps because they have more exposure to and experience with infants. While extant findings have shown significant positive correlations between women's IFP responses in the third trimester of pregnancy and those in early postnatal period (a result suggesting consistency in maternal interpretation of infant emotions across the transition from pregnancy to parenthood), the same study also revealed differences in the IFP responses between primiparous and multiparous mothers

[21] It is interesting to note that our post-hoc exploratory group comparisons did detect multiple differences between mothers in the current sample and the previous sample when they were examined by infant-mother attachment classification. More specifically, the mothers who went on to have *securely* attached infants were significantly older in the current sample than those in the original sample, had marginally higher histories of adult high betrayal traumatization, used significantly fewer 'guilt/shame' labels in identifying the IFP pictures, and used marginally fewer 'sad' labels. The mothers of infants who went on to have a *disorganized* attachment pattern reported marginally fewer trauma symptoms than their counterparts in the previous sample, used significantly more "surprised" labels in identifying the IFP pictures, and earned marginally lower reference-sample concordance scores for negatively-valenced pictures. These findings suggest that the links between 1) maternal high betrayal traumatization in adulthood and infant-mother attachment disorganization and 2) use of sad labels in the IFP and infant-mother attachment security may not be particularly stable across samples.

(Siddiqui, Eisemann, & Hägglöf, 1999). More specifically, primipara mothers used the category joy more often in prenatal assessment than the multipara mothers, and used the category fear less often in postnatal assessment than the multipara mothers. The authors interpret these results as highlighting the importance of the current context of experience in shaping women's interpretation of infant facial expressions of emotion. A replication study utilizing the same procedural time table with a larger sample of pregnant and both primiparous and multiparous participants would be necessary to determine which of the above two possibilities is more likely.[22]

A third possible explanation emerges from the fact that the two samples featured quite divergent attachment classification distributions, with the current sample containing fewer secure and more disorganized infants overall. Additionally, over two-thirds of disorganized infants in the current sample were assigned a secondary classification of resistant (with none given an avoidant alternate placement), whereas the previous sample's disorganized subsample had an even distribution of secondary placements of secure, avoidant, and resistant. As such, it may be

[22] In a preliminary test of this possibility, we compared the final abridged model from Bernstein et al. (2014) (which included AHBT, concordance in labeling negative photos, number of sad labels used, and number of angry labels used) to a model also including birth status (primiparous vs. multiparous) as a main effect and in interactions with the above four variables. This full model did not explain significantly more variance, $\chi^2(4)=1.90$, $p=.75$, *ns*, and explained 21.5% of the variance in attachment outcome (vs. 15.5% in the original model). However, parameter estimates revealed that no predictor or interaction reached or trended toward significance. The same pattern of results emerged in a linear regression predicting continuous infant-mother disorganization.

the previously reported findings are best able to predict disorganized alt. secure and avoidant patterns of infant-mother attachment and less able to predict the disorganized alt. resistant pattern.

A fourth viable explanation for our null results is that the current sample is simply underpowered. While 91 women were originally recruited for the study, only 63 (69.2%) remained in the study for the 12-month assessment. This attrition rate of 30.8% was almost double the 16.2% rate found in Bernstein et al. (2014)—an especially surprising rate given the previous study spanned more than twice the number of months (i.e. 20 months vs. 9 months), and lower attrition should be expected in shorter longitudinal investigations. As such, it is likely that our unexpectedly small sample size limited the power with which we could detect potentially real effects, especially for the categorical data analyses. Indeed, while our previous sample (Bernstein et al., 2014) contained 17 disorganized and 53 secure dyads, the current sample included only 14 disorganized and 24 secure dyads—i.e. less than half the number of secure dyads in the original sample. Thus, it remains possible that with a larger sample size that includes a more typically representative distribution of secure vs. disorganized dyads, we would be able to replicate previous findings.

Additional methodological differences across the two studies may also explain the different pattern of results. Most notable were differences in how the IFP was administered. In the first study, the higher rates with which participants across both attachment classifications gave no response, or gave non-emotion word responses classified as "other" suggests that the additional prompts as recommended in the IFP manual (described above on page 27-28) were not, in fact, provided or consistently provided. Thus, it could be that in utilizing these recommended prompts to clarify and change non-emotion or ambiguous labels, the current study

unknowingly inflated (a) the number of "sad" labels used by participants who go on to have a disorganized attachment relationship with their infant, (b) the number of "angry" labels used by participants who go on to have a secure attachment relationship with their infant, and/or (c) the reference sample concordance in labeling negatively valenced photos within those participants who go on to have a secure attachment relationship with their infant. An additional study that does not utilize this prompt with participants would be necessary to rule out this possibility. Future studies might also wish to use an as-of-yet undeveloped updated edition of the IFP, with higher-resolution photographs and perhaps using a single infant face to model all included emotion faces to minimize the likelihood that emotion attributions are based on infant gender or ethnicity.

Consistent with our previous study (Bernstein et al., 2014), we did not find that maternal recognition of infant fear predicted infant-mother attachment disorganization. Given the centrality of fear in the conceptualization of attachment disorganization, this finding remains somewhat surprising. It is at least somewhat consistent, however, with findings by DeOliveira and colleagues (2005), who found that women with Unresolved states of mind had significantly lower scores than Autonomous mothers on measures of responsiveness (i.e. their awareness, acceptance, and coaching of this emotion) to their children's sadness and anger, but not to their fear. It could be that by grouping frightened and frightening mothers in disorganized attachment relationships with their infants, we and DeOliveira et al. (2005) have been unknowingly cancelling out real but opposing effects, with mothers prone toward frightening behaviors likely to see less fear and those prone toward frightened behaviors likely to see more fear. As such, it remains that meaningful patterns in the recognition of infant fear would emerge if mothers of

disorganized infants were categorized based on their propensity toward frightening or frightened behavior.

In addition to not replicating prior findings highlighting the importance of (a) high betrayal traumatization in adulthood, (b) reference-sample agreement in labeling negatively valenced IFP photos, (c) over-identification of anger in the IFP photos, and (d) under-identification of sadness in the IFP photos in predicting later infant-mother attachment disorganization, current analyses pointed to a different set of variables that may help identify mothers at risk for disorganized infant-caregiver attachment. More specifically, we found that increases in maternal helplessness significantly predicted subsequent disorganization vs. secure attachment classification. These findings provide some additional support for the long-standing idea that maternal helplessness positively predicts infant-mother attachment disorganization (e.g. George & Solomon, 1989; Lyons–Ruth et al., 2003). Nevertheless, caution must be exercised in interpreting this finding, as maternal helplessness was only found to be significant in predicting attachment security vs. disorganization when modeled along with maternal age, trauma symptoms, and history of high betrayal traumatization in adulthood. When modeled alone, it was not significant in predicting attachment outcome.

Additional exploratory post-hoc analyses revealed that the only label used significantly differently by mothers across attachment groups was surprise, with women going on to have disorganized attachment relationships with their infant seeing more surprise in the ambiguous IFP photos than those going on to have a secure attachment relationship with their infant. Because the procedure with which the current study administered the IFP likely differed from the original study (as described above), and the likelihood of type I error is substantially inflated in cases of multiple comparisons, it is unclear whether this finding is a function of a modified

administration, reflects a type I error, or reveals a real difference in perceptions as a function of attachment risk not detected in the previous study. If the latter option is true, it may be that women who misinterpret their infant's cues as expressing surprise go on to have infants with disorganized attachments because when these mothers engage in frightening behavior (which is more prevalent in mothers of disorganized infants; e.g. David & Lyons-Ruth 2005), they are more likely to interpret their infant's distressed reaction as surprised (a positive, perhaps playful emotion) and thus continue to play with their children in frightening ways.

Because we did not find support for our first aim, we could not test our second aim precisely as specified—i.e. determining the extent to which the significant variance in attachment outcomes explained by biases in women's interpretations of infant emotions was overlapping with that explained by maternal caregiving helplessness and unresolved state of mind. Nevertheless, categorical and continuous regression models predicting attachment disorganization that included both IFP and CHQ variables in the model revealed that IFP coefficients did not substantially change when CHQ and overall Unresolved scores were added to the model, indicating that they are not overlapping predictors.

Moreover, we did not find that most components of caregiving helplessness or unresolved state of mind to predict infant-caregiver attachment disorganization. More specifically, results of our expanded model revealed that while maternal helplessness (i.e. the degree to which the mother feels helpless or unable to take care of her child) did predict infant-mother disorganized vs. secure classification, mother and child fright (i.e. the degree to which the mother is frightened by or frightening toward the child), and child caregiving (i.e. the degree to which the child tries to take care of others) did not. As such, our findings suggest that it is more specifically a mother's sense of being unable to control and discipline her child and belief

that she is a failure unable to make needed changes that may be most relevant to the development of infant-caregiver disorganization. Interestingly, maternal helplessness did not emerge as a significant predictor in continuous analyses, suggesting that while it may help distinguish between the two attachment patterns, the association between maternal helplessness and infant disorganization is not linear or dose-dependent, with more helplessness leading to more intense disorganization after a certain threshold.

The other two theorized aspects to caregiver helplessness, and overall unresolved score on the AAI, did not predict infant-caregiver disorganization in the current sample in either categorical or continuous analyses. There are several reasons—both methodological and conceptual—why this may be the case. First, as described above, our small sample size renders the analyses underpowered to detect significant effects. This is especially true for analyses involving unresolved State of Mind, as the subset of participants who completed both the AAI and the Strange Situation was quite small (n = 16). Second, it could be that our measure of caregiving helplessness was not well suited to this particular population. More specifically, the CHQ was developed using a sample of mothers of older children (mean age = 6 years; range: 3 - 11 years) and thus some items may be inappropriate for with mothers of six month olds. Indeed, items like "I feel that my child is a great actor/actress" (from the Child Caregiving subscale) may not be relevant to mothers of (preverbal) six month olds, while items like "My child hits, kicks, or bites me" (from the Mother and Child Frightened subscale) capture behavior that is highly developmentally appropriate for infants of this age. Thus, it could be that mother and child fright and child caregiving measured with a different instrument may have predicted infant-mother disorganization in the current sample, and that these constructs as measured by the CHQ would also positively predict this pattern of attachment in a sample of mothers with older children.

Implications

This dissertation was part of an ongoing effort to identify the caregiver cognitive processes that underlie infant-caregiver attachment and, in this case, infant-caregiver attachment disorganization more specifically. Based on theory and previous empirical findings, we had previously proposed that maternal biases in recognizing infant sadness and anger may be one such cognitive process. The current study did not provide additional support for this idea, but it did demonstrate that maternal helplessness—another cognitive/attributional phenomenon previously identified as relevant to the development of infant-caregiver disorganization—did significantly predict infant-mother secure vs. disorganized attachment classification. This finding adds support to the proposal that cognitive processes in general and caregiver helplessness in particular play an important role in the development of infant-caregiver attachment disorganization. As such, service providers working with pregnant women and new mothers (including obstetricians, home-visiting nurses, case managers, and infant mental health specialists) would likely benefit from assessing their clients' felt maternal helplessness when creating an individualized service plan for families. The current findings suggest that mothers high in maternal helplessness may well benefit from one of a number of evidence-based interventions for promoting attachment security.

Practically speaking, the current findings have implications for early screening and targeted prevention efforts. While the author's previous findings (Bernstein et al., 2014) suggested that the IFEEL Picture Task (IFP) might serve as a brief and effective screening tool with which social service agencies might predict risk for disorganized attachment, the current

findings do not support this proposal.[23] Instead, our finding that maternal helplessness as measured by the CHQ emerged as the only significant predictor of disorganized vs. secure infant-mother attachment classification, suggests that the CHQ, or perhaps even just the 7-item Maternal Helplessness subscale, could serve the same purpose. As a brief, non-proprietary assessment tool, the CHQ (used in part or full) could be easily implemented with many women in a wide range of settings.

Conclusion

While the need to identify the caregiver cognitive processes underlying risk for disorganized attachment remains an important aim in the fields of attachment, infant mental health, and developmental psychopathology, in failing to replicate previous findings by the current author, the current study was unable to provide support for the idea that cognitive biases in the recognition of negative infant affect—and specifically, the over-identification of anger and under-identification of sadness—play a role in this risk. Instead, current analyses pointed caregiver helplessness, and perhaps the over-identification of infant surprise—as possible predictors of disorganized vs. secure infant-mother attachment. Nevertheless, our small sample size and potentially meaningful variations in the way in which the IFP was administered across studies renders these findings difficult to interpret. Therefore, additional research is needed to fully understand the association between maternal recognition of infant affect and infant-mother attachment risk.

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[23] As discussed above, it remains possible that the IFP predicts infant-caregiver disorganized alt. secure and disorganized alt. avoidant attachment and CHQ Maternal Helplessness predicts infant-caregiver disorganized alt. resistant attachment, thus future replications will be necessary before ruling out the IFP as a potentially useful risk assessment instrument.

APPENDIX

COMPLETE RECORD OF SELF-REPORT MEASURES

Brief Betrayal Trauma Survey

Directions: We hope you trust us to keep your responses in complete confidence and privacy; this is the reason that we ask you not to include your name on any of our questionnaires. Nonetheless, if you feel uncomfortable answering any of the more intimate questions in this section, just skip them and go on to the next section.

For each item below, please mark one response in the column labeled "Before Age 18" AND one response in the column labeled "Age 18 or Older."

Have each of the following events happened to you, and if so, how often?

0	1	2
Never	One or Two Times	More Than That

1. Been in a major earthquake, fire, flood, hurricane, or tornado that resulted in significant loss of personal property, serious injury to yourself or a significant other, the death of a significant other, or the fear of your own death.

2. Been in a major automobile, boat, motorcycle, plane, train, or industrial accident that resulted in similar consequences.

3. Witnessed someone with whom you were very close (such as a parent, brother or sister, caretaker, or intimate partner) committing suicide, being killed, or being injured by another person so severely as to result in marks, bruises, burns, blood, or broken bones. This might include a close friend in combat.

4. Witnessed someone with whom you were NOT so close undergoing a similar kind of traumatic event.

5. Witnessed someone with whom you were very close deliberately attack another family member so severely as to result in marks, bruises, blood, broken bones, or broken teeth.

6. Witnessed someone with whom you were NOT so close deliberately attack a family member that severely.

7. You were deliberately attacked that severely by someone with whom you were very close.

8. You were deliberately attacked that severely by someone with whom you were NOT so close.

9. You were made to have some form of sexual contact, such as touching or penetration, by someone with whom you were very close (such as a parent or lover).

10. You were made to have such sexual contact by someone with whom you were NOT close.

11. You were emotionally or psychologically mistreated over a significant period of time by someone with whom you were very close (such as a parent or lover).

12. You were emotionally or psychologically mistreated over a significant period of time by someone with whom you were NOT so close.

13. Experienced the death of one of your own children.

14. Experienced a seriously traumatic event not already covered in any of these questions.

Brief Betrayal Trauma Survey Scoring:

High Betrayal Trauma History: Sum of items 7, 9, & 11.
Medium Betrayal Trauma History: Sum of items 3, 5, 8, 10, 12, 13, & 14.
Low Betrayal Trauma History: Sum of items 1, 2, 4, & 6.

Trauma Symptom Checklist-40

Directions: How often have you experienced each of the following in the last two months?

0 1 2 3
Never Often

1. Headaches
2. Insomnia (trouble getting to sleep)
3. Weight loss (without dieting)
4. Stomach problems
5. Sexual problems
6. Feeling isolated from others
7. "Flashbacks" (sudden, vivid, distracting memories)
8. Restless sleep
9. Low sex drive
10. Anxiety attacks
11. Sexual overactivity

12. Loneliness
13. Nightmares
14. "Spacing out" (going away in your mind)
15. Sadness
16. Dizziness
17. Not feeling satisfied with your sex life
18. Trouble controlling your temper
19. Waking up early in the morning and can't get back to sleep
20. Uncontrollable crying
21. Fear of men
22. Not feeling rested in the morning
23. Having sex that you didn't enjoy
24. Trouble getting along with others
25. Memory problems
26. Desire to physically hurt yourself
27. Fear of women
28. Waking up in the middle of the night
29. Bad thoughts or feelings during sex
30. Passing out
31. Feeling that things are "unreal"
32. Unnecessary or over-frequent washing
33. Feelings of inferiority
34. Feeling tense all the time
35. Being confused about your sexual feelings
36. Desire to physically hurt others
37. Feelings of guilt
38. Feelings that you are not always in your body
39. Having trouble breathing
40. Sexual feelings when you shouldn't have them

Trauma Symptom Checklist-40 Scoring:

Dissociation Subscale: Sum of items 7, 14, 16, 25, 31, & 38.
Anxiety Subscale: Sum of items 1, 4, 10, 16, 21, 27, 32, 34, & 39.
Depression Subscale: Sum of items 2, 3, 9, 15, 19, 20, 26, 33, & 37.
Sexual Abuse Trauma Index Subscale: Sum of items 5, 7, 13, 21, 25, 29, & 31.
Sleep Disturbance Subscale: Sum of items 2, 8, 13, 19, 22, & 28.
Sexual Problems Subscale: Sum of items 5, 9, 11, 17, 23, 29, 35, & 40.
TSC-40 total score: Sum of items 1-40.

Caregiving Helplessness Questionnaire

Directions: This section of questions will explore how it feels to be your baby's parent and, more specifically, how it feels when you and your child are together. The following statements describe how some parents feel about their relationships with their child. Read each statement carefully and circle the number that most clearly reflects your relationship with your child.

1	2	3	4	5
not characteristic at all		somewhat characteristic		very characteristic

1. When I am with my child, I often feel out of control.
2. My child is good at tending to and caring for others.
3. I am frightened of my child.
4. My child hits, kicks, or bites me.
5. I often feel that there is nothing I can do to discipline my child.
6. My child knows how to put other people at ease.
7. When I am with my child, I often feel that my child is out of control.
8. I feel that my child is a great actor/actress.
9. My child is very sensitive to the feelings and needs of others.
10. I feel that I am a failure as a mother.
11. My child likes to be a clown or family comedian.
12. I feel that I punish my child more harshly than I should.
13. My child becomes so upset or distressed that he can't be soothed.
14. My child loses it when he/she is separated from me.
15. Sometimes my child acts as if he/she is afraid of me.
16. I enjoy doing things with my child that make him or her happy.
17. My child is always trying to make others laugh.
18. I feel that my situation needs to be changed but am helpless to do anything about it.
19. I would describe myself as a reliable person.
20. I feel that my life is chaotic and out of control.
21. I am rarely bored when I am with my child.
22. My child treats me in a rude or sarcastic way.
23. I am happy with myself just the way I am.
24. I rarely feel guilty about my actions.
25. I can easily express myself to others.
26. I frequently talk to others about my child.

Caregiver Helplessness Scoring:

Mother Helpless Subscale: Sum of items 1, 5, 7, 10, 18, 20, & 22.
Mother and Child Frightened Subscale: Sum of items 3, 4, 12, 13, 15, & 15.
Child Caregiving Subscale: Sum of items 2, 6, 8, 9, 11, & 17.

REFERENCES CITED

Ainsworth, M.D.S., & Bell, S.M. (1970). Attachment, exploration, and separation: Illustrated by the behavior of one-year-olds in a strange situation. *Child Development*, 41, 49-67. doi: 10.1111/j.1467-8624.1970.tb00975.x.

Ainsworth, M. D. S., Bell, S. M., & Stayton, D. J. (1974) Infant-mother attachment and social development: 'Socialisation' as a product of reciprocal responsiveness to signals. In: M: J. M. Richards (Ed.) The integration of a child into a social world. London: Cambridge University Press. Pp. 9-135. Ainsworth, M.D.S., Blehar, M., Waters, E., & Wall, S. (1978). *Patterns of attachment*. Hillsdale, NJ: Erlbaum.

Appelbaum, M. I., Butterfield, P. M., & Culp, R. E. (1993). Operating characteristics and psychometric properties of the IFEEL Pictures. In R. N. Emde, J. D. Osofsky, & P. M. Butterfield (Eds.), The IFEEL Pictures: A new instrument for interpreting emotions (pp. 97–103). Madison, CT: International Universities Press.

Bakermans–Kranenburg, M. J., & van IJzendoorn, M. H. (1993). A psychometric study of the Adult Attachment Interview: Reliability and discriminant validity. *Developmental Psychology, 29*, 870-879. doi: 10.1037/0012-1649.29.5.870

Bakermans-Kranenburg, M.J., van IJzendoorn, M.H., & Juffer, F. (2003). Less is more: Meta-analyses of sensitivity and attachment interventions in early childhood. *Psychological Bulletin*, 129, 195–215. doi: 10.1037/0033-2909.129.2.195

Bakermans-Kranenburg, M. J., Van IJzendoorn, M. H., & Juffer, F. (2005). Disorganized Infant Attachment and Preventive Interventions: A Review and Meta-Analysis. *Infant Mental Health Journal*, *26*, 191–216. doi: 10.1002/imhj.20046

Belsky J, & Cassidy J. (1994). Attachment: Theory and evidence. In M. Rutter, D. Hay (Ed.s.) Development through life: A handbook for clinicians. (pp. 373-402). Oxford: Blackwell.

Benoit, D. & Parker, K. C. H (1994). Stability and transmission of attachment across three generations. *Child Development, 65*, 1444-1456. doi: 10.2307/1131510

Bernier, A., & Meins, E. (2008). A threshold approach to understanding the origins of attachment disorganization. *Developmental Psychology, 44,* 969-982. doi: 10.1037/0012-1649.44.4.969.

Bernstein, R.E., Tenedios, C., Laurent, K.H., Measelle, J.R., & Ablow, J.C. (2014). The eye of the begetter: Predicting infant attachment disorganization from women's prenatal interpretations of infant facial expressions. *Infant Mental Health Journal, 35,* 233-244. doi: 10.1002/imhj.21438

Bowlby, J. (1980). Attachment and loss, Vol. III, Loss: Sadness and depression. New York: Basic Books.

Bowlby, J. (1982). *Attachment and loss. Vol. 1: Attachment* (2nd Ed.). New York: Basic Books (new printing, 1999, with a foreword by Allan N. Schore; originally published in 1969).

Brumariu, L. E., Bureau, J., Nemoda, Z., Sasvari-Szekely, M., & Lyons-Ruth, K. (2016). Attachment and temperament revisited: infant distress, attachment disorganisation and the serotonin transporter polymorphism. *Journal of Reproductive and Infant Psychology, 34*, 77-89. doi: 10.1080/02646838.2015.1072764

Campos, J. J., Barrett, K. C., Lamb, M. E., Goldsmith, H. H., & Stenberg, C. (1983). *Socioemotional development*. In M.M. Haith & J.J. Campos (Eds.), Handbook of child psychology (Vol. 2): Infancy and developmental psychobiology. New York: Wiley.

Carlson, E. A. (1998), A Prospective Longitudinal Study of Attachment Disorganization/ Disorientation. *Child Development, 69*, 1107–1128. doi: 10.1111/j.1467-8624.1998.tb06163.x

Carlson V., Cicchetti D., Barnett D., & Braunwald K. (1989). Disorganized/disoriented attachment relationships in maltreated infants. *Developmental Psychology, 25*, 525–531. doi: 10.1037/0012–1649.25.4.525

Cicchetti, D., Rogosch, F., & Toth, S. L. (2006). Fostering secure attachments in infants in maltreating families through preventive interventions. *Development and Psychopathology, 18*, 623-649. doi: 10.1017/S0954579406060329

David, D., & Lyons-Ruth, K. (2005). Differential attachment responses of male and female infants to frightening maternal behavior: Tend or befriend versus fight or flight? *Infant Mental Health Journal, 21*, 1–18. doi:10.1002/imhj.20033

DeOliveira, C. A., Bailey, H. N., Moran, G., & Pederson, D. R. (2004). Emotion socialization as a framework for understanding the development of disorganized attachment. *Social Development, 13*, 437-467. doi: 10.1111/j.1467-9507.2004.00276.x

DeOliveira, C.A., Moran, G., & Pederson, D.R. (2005). Understanding the link between maternal adult attachment classifications and thoughts and feelings about emotions. *Attachment & Human Development, 7*, 153-170. doi: 10.1080/14616730500135032

DeWolff, M. S. & van IJzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Development, 68*, 571-591. doi: 10.1111/j.1467-8624.1997.tb04218.x

Diamond, A. (2013). Executive functions. Annual Review of Psychology, 64, 135–68. doi:10.1146/annurev-psych-113011-143750

Dozier, M., Lindhiem, O., Lewis, E., Bick, J., Bernard, K., & Peloso, E. (2009). Effects of a foster parent training program on children's attachment behaviors: Preliminary evidence from a

randomized clinical trial. *Child and Adolescent Social Work Journal, 26*, 321-332. doi: 10.1007/s10560-009-0165-1

Elliot, D. M. & Briere, J. (1992). Sexual abuse trauma among professional women: Validating the Trauma Symptom Checklist - 40 (TSC-40). *Child Abuse & Neglect, 16,* 391-398. doi:10.1016/0145–2134(92)90048-V

Emde, R. N., Butterfield, P. M., Osofsky, J. D. (1987). *The I-FEEL Pictures: A New Instrument for Interpreting Emotions.* Madison, CT: International Universities Press.

Enlow, M. B., Egeland, B., Carlson, E., Blood, E., & Wright, R. J. (2014). Mother-infant attachment and the intergenerational transmission of posttraumatic stress disorder. Developmental Psychopathology, 26, 41-65. doi: 10.1017/S0954579413000515

Fearon, R. P., Bakermans-Kranenburg, M. J., van IJzendoorn, M. H., Lapsley, A. M., & Roisman, G. I. (2010). The significance of insecure attachment and disorganization in the development of children's externalizing behavior: A meta-analytic study. *Child Development, 81,* 435–456. doi: 10.1111/j.1467-8624.2009.01405.x

Fisher, N. K. (2000). *Mental representations of attachment and caregiving in women sexually abused during childhood: Links to the intergenerational transmission of trauma?* Doctoral dissertation, The City University of New York, New York, NY.

Fonagy, P., Steele, H., Moran, G., Steele, M., & Higgitt, A. (1991). The capacity for understanding mental states: The reflective self in parent and child and its significance for security of attachment. *Infant Mental Health Journal, 13*, 200–217. doi:10.1002/1097-0355(199123)12:3

Fonagy, P., Gergely, G., Jurist, E. L., & Target, M. (2002). *Affect regulation, mentalization, and the development of the self.* New York: Other Press.

Fonagy, P., Target, M., Steele, H., & Steele, M. (1998). *Reflective-functioning manual, Version 5.0*. Unpublished manuscript. University College London, London UK.

Fraley, R. C., & Hudson, N. W. (in press). *The development of attachment styles*. In J. Specht (Ed.), Personality Development Across the Lifespan. New York: Academic Press.

Gander, M., & Buchheim, A. (2015). Attachment classification, psychophysiology and frontal EEG asymmetry across the lifespan: a review. *Frontiers in Human Neuroscience, 9*, 1-16. doi: 10.3389/fnhum.2015.00079

George, C., Kaplan, N., & Main, M. (1985). *Adult Attachment Interview*. Unpublished protocol, University of California, Berkeley.

George, C., & Solomon, J. (1989). Internal working models of caregiving and security of attachment at age six. *Infant Mental Health Journal, 10*, 222–237. doi: 10.1002/1097-0355(198923)10:3

George, C. & Solomon, J. (2011). Caregiving helplessness: The development of a screening measure for disorganized maternal caregiving. In J. Solomon C. George (Ed.), *Disorganized attachment and caregiving* (pp. 133–166). New York, NY, US: Guilford Press.

Goldberg, L.R., & Freyd, J.J. (2006). Self-reports of potentially traumatic experiences in an adult community sample: Gender differences and test-retest stabilities of the items in a brief betrayal-trauma survey. *Journal of Trauma & Dissociation*, 7, 39-63. doi:10.1300/J229v07n03_04

Green, J., & Goldwyn, R. (2002). Attachment disorganisation and psychopathology: new findings in attachment research and their potential implications for developmental psychopathology in childhood. *Journal of Child Psychology and Psychiatry, 43*, 835-846. doi: 10.1111/1469-7610.00102

Gross, J. J. (2015). Emotion Regulation: Current Status and Future Prospects. *Psychological Inquiry, 26*, 1–26. doi: 10.1080/1047840X.2014.940781

Harlow, H. F. (1958). The nature of love. *American Psychologist, 13*, 673-685. doi: 10.1037/h0047884

Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology*, *52*, 511–524. doi:10.1037/0022-3514.52.3.511

Hesse, E. (2008). The Adult Attachment Interview: *Protocol, Method of Analysis, and Empirical Studies*. In J. Cassidy & P.R. Shaver (Eds.), Handbook of Attachment, Second Edition: Theory, Research, and Clinical Applications (pp. 552-598). New York: Guilford Press.

Hesse, E., & Main, M. (2000). Disorganized infant, child, and adult attachment: Collapse in behavioral and attentional strategies. *Journal of the American Psychoanalytic Association, 48*, 1097-1127. doi:10.1177/00030651000480041101

Hesse, E., & Main, M. (2006). Frightened, threatening, and dissociative parental behavior in low-risk samples: Description, discussion, and interpretations. Development and Psychopathology, 18, 309-343. doi:10.1017/S0954579406060172

Kelly, K., Slade, A, & Grienenberger, J. F.. (2005). Maternal reflective functioning, mother-infant affective communication, and infant attachment: Exploring the link between mental states and observed caregiving behavior in the intergenerational transmission of attachment. *Attachment & Human Development, 7*, 299-311. doi: 10.1080/14616730500245963

Knezević, M., & Jovancević, M. (2004). The IFEEL pictures: Psychological trauma and perception, and interpretation of child's emotions. *Nordic Journal of Psychiatry, 58*, 139-145. doi: 10.1080/08039480410005521

Kobak, R., Cassidy, J., Lyons-Ruth, K., & Ziv, Y. (2006). Attachment, stress, and psychopathology: A developmental pathways model. In D. Cicchetti, & D.J. Cohen (Eds.) *Developmental psychopathology, Vol 1: Theory and method (2nd ed.),* (pp. 333-369). Hoboken, NJ: John Wiley & Sons.

Leerkes, E. M. (2011). Maternal sensitivity during distressing tasks: A unique predictor of attachment security. *Infant Behavior and Development, 34*, 443-446. doi:.1016/j.infbeh.2011.04.006

Leerkes, E. M., Gedaly, L., & Su, J. (2016). Parental Sensitivity and Infant Attachment. In L. Balter & C. S. Tamis-LeMonda (Eds.) *Child Psychology (3rd ed.),* (pp. 21-41). New York, NY: Routledge.

Lieberman, A. F., & Van Horn, P. (2008). Psychotherapy with infants and young children: Repairing the effects of stress and trauma on early attachment. New York, NY: Guilford.

Lundy, B. L. (2003). Father-and mother-infant face-to-face interactions: Differences in mind-related comments and infant attachment? *Infant Behavior and Development, 26*, 200-212. doi: 10.1016/S0163-6383(03)00017-1

Lyons-Ruth, K., Alpern, L., & Repacholi, B. (1993). Disorganized infant attachment classification and maternal psychosocial problems as predictors of hostile-aggressive behavior in the preschool classroom. *Child Development, 64*, 572–585. doi: 10.1111/j.1467-8624.1993.tb02929.x

Lyons–Ruth, K. & Block, D. (1996). The disturbed care-giving system: Relations among childhood trauma, maternal caregiving, and infant affect and attachment. *Infant Mental Health Journal, 17*, 257–275. doi: 10.1002/(SICI)1097-0355(199623)17:3

Lyons-Ruth, K., Bronfman, E., & Parsons, E. (1999). Maternal frightened, frightening, or atypical behavior and disorganized infant attachment patterns. *Monographs of the Society for Research in Child Development, 64*, 67. doi:10.1111/1540-5834.00034

Lyons-Ruth, K., & Jacobvitz, D. (1999). Attachment disorganization: Unresolved loss, relational violence, and lapses in behavioral and attentional strategies. In J. Cassidy & P. R. Shaver (Eds.), Handbook of attachment: Theory, research, and clinical applications (pp. 520–554). New York: Guilford Press.

Lyons-Ruth, K., Yellin, C., Melnick, S., & Atwood, G. (2003). Childhood experiences of trauma and loss have different relations to maternal unresolved and hostile-helpless states of mind on the AAI. *Attachment & Human Development, 5*, 330 –352. doi:10.1080/ 14616730310001633410

Lyons-Ruth, K., Yellin, C., Melnick, S., & Atwood, G. (2005). Expanding the concept of unresolved mental states: Hostile/helpless states of mind on the Adult Attachment Interview are associated with disrupted mother-infant communication and infant disorganization. *Development and Psychopathology, 17*, 1–23. doi:10.1017/S0954579405050017

Lyons-Ruth, K., Zoll, D., Connell, D., & Grunebaum, H., (1989). Family deviance and parental loss in childhood: Associations with maternal behavior and infant maltreatment during the first two years of life. *Development and Psychopathology, 1*, 219–236. doi: 10.1017/S0954579400000420

Madigan, S., Bakermans-Kranenburg, M. J., Van Ijzendoorn, M. H., Moran, G., Pederson, D. R., & Benoit, D. (2006). Unresolved states of mind, anomalous parental behavior, and disorganized attachment: A review and meta-analysis of a transmission gap. *Attachment & Human Development, 8*, 89–111. doi:10.1080/14616730600774458

Main, M. (2000). The organized categories of infant, child, and adult attachment: flexible vs. inflexible attention under attachment-related stress. *Journal of the American Psychoanalytic Association, 48*, 1055-1095. doi:10.1177/00030651000480041801

Main, M. & Goldwyn, R. (1998). Adult attachment scoring and classification system. Version 6.3. University of California at Berkeley; Unpublished manuscript

Main, M., & Hesse, E. (1990). *Parents' unresolved traumatic experiences are related to infant disorganized attachment status: Is frightened and/or frightening parental behavior the linking mechanism?* In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), Attachment in the preschool years: Theory, research, and intervention (pp. 161–182). Chicago, IL: University of Chicago Press.

Main, M., & Hesse, E. (1992). *Frightening, frightened, timid/deferential, dissociated, or disorganized behavior on the part of the parent: Coding system*. Unpublished manual, University of California, Berkeley.

Main, M., Kaplan, N., & Cassidy, J. (1985). *Security in infancy, childhood, and adulthood: A move to the level of representation.* In I. Bretherton & E. Waters (Eds.), Growing points of attachment theory and research. Monographs of the Society for Research in Child Development, 50, 66–104. doi:10.2307/3333827

Main, M., & Solomon, J. (1990). Procedures for identifying infants as disorganized/disoriented during the Ainsworth Strange Situation. In Greenburg, M. T., Cicchetti, D., & Cummings, M. E. (Eds.), *Attachment in the preschool years: Theory, research, and intervention* (121-160). Chicago: University of Chicago Press.

Main, M., & Weston, D. R. (1981). The quality of the toddler's relationship to mother and father: Related to conflict behavior and the readiness to establish new relationships. *Child Development, 52*, 932-940. doi: 10.2307/1129097

Mangelsdorf, S.C., & Frosch, C.A. (1999). Temperament and attachment: one construct or two? *Advances in Child Development and Behavior, 27*, 181–220. doi: 10.1016/S0065-2407(08)60139-1

Matas, L., Arend, R. A., & Sroufe, L. A. (1997). Continuity of adaptation in the second year: The relationship between quality of attachment and later competence. *Child Development, 49*, 547-556. doi:10.2307/1128221

May, J. C. (2005). Family attachment narrative therapy: Healing the experience of early childhood maltreatment. *Journal of Marital and Family Therapy*, *31*, 221-237. doi: 10.1111/j.1752-0606.2005.tb01565.x

McElwain, N.L., Booth-LaForce, C. (2006). Maternal sensitivity to infant distress and nondistress as predictors of infant-mother attachment security. *Journal of Family Psychology. 20*, 247–255. doi:10.1037/0893-3200.20.2.247

Meins, E., Fernyhough, C., Russell, J., & Clark-Carter, D. (1998). Security of attachment as a predictor of symbolic and mentalising abilities: A longitudinal study. *Social Development, 7*, 1-24, doi:10.1111/1467-9507.00047

Meins, E., Fernyhough, C., Fradley, E., & Tuckey, M. (2001). Rethinking maternal sensitivity: Mothers' comments on infants' mental processes predict security of attachment at 12 months. *Journal of Child Psychology and Psychiatry, 42*, 637-648. doi:10.1111/1469-7610.00759

Munson, J. A., McMahon, R. J., & Spieker, S. J. (2001). Structure and variability in the developmental trajectory of children's externalizing problems: Impact of infant attachment,

maternal depressive symptomatology, and child sex. *Development and Psychopathology*, *13*(2), 277–296. doi:10.1017/S095457940100205X

Newman, L., Sivaratnam, C., & Komiti, A. (2015). Attachment and early brain development - neuroprotective interventions in infant-caregiver therapy. *Translational Developmental Psychiatry, 3*, 28647-. doi:10.3402/tdp.v3.28647

Ogawa, J. R., Sroufe, L. A., Weinfield, N. S., Carlson, E. A., & Egeland, B. (1997) Development and the fragmented self: Longitudinal study of dissociative symptomatology in a nonclinical sample. *Development and Psychopathology, 9*, 855–879. doi:10.1017/S0954579497001478

Open Science Collaboration. (2015). Estimating the reproducibility of psychological science. *Science, 349*(6251), aac4716. Doi: 10.1126/science.aac4716

Pauli-Pott, U., Havercock, A., Pott, W., & Beckmann, D. (2007). Negative emotionality, attachment quality, and behavior problems in early childhood. *Infant Mental Health Journal, 28*, 39–53. doi:10.1002/imhj.20121.

Planalp, E. M., & Braungart-Rieker, J. M., (2013). Temperamental precursors of infant attachment with mothers and fathers. Infant Behavior and Development, 36, 796-808. doi:10.1016/j.infbeh.2013.09.004.

Ranson, K. E., & Urichuk, L. J. (2008). The effect of parent-child attachment relationships on child biopsychosocial outcomes: A review. *Early Child Development and Care, 178*, 129 – 152. doi: 10.1080/03004430600685282

Roisman, G. I., Fraley, R. C., & Belsky, J. (2007). A taxometric study of the Adult Attachment Interview. *Developmental Psychology, 43*, 675– 686. doi:10.1037/0012-1649.43.3.675

Sagi A., van IJzendoorn M. H., Scharf M., Koren-Karie N., Joels T., Mayseless O. (1994). Stability and discriminant validity of the Adult Attachment Interview: A psychometric study in young Israeli adults. *Developmental Psychology*, *30*, 988-1000. doi:10.1037/0012-1649.30.5.771

Schuengel, C., Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (1999). Frightening maternal behavior linking unresolved loss and disorganized infant attachment. *Journal of Consulting and Clinical Psychology, 67*, 54-63. doi:10.1037/0022-006X.67.1.5

Shaw, D. S., Keenan, K., Vondra, J. I., Delliquadri, E., & Giovanelli, J. (1997). Antecedents of preschool children's internalizing problems: A longitudinal study or low-income families. *Journal of the American Academy of Child and Adolescent Psychiatry*, *36*, 1760-1767. doi: 10.1097/00004583-199712000-00025

Shaw, D. S., Owens, E. B., Vondra, J. I., & Keenan, K. (1996). Early risk factors and pathways in the development of early disruptive behavior problems. *Development and Psychopathology, 8*, 679-699. doi:10.1017/S0954579400007367

Siddiqui, A., Eisemann, M., & Hägglöf, B. (1999). The stability of maternal interpretation of infant's facial expressions during pre- and postnatal period and its relation to prenatal attachment. *Early Child Development and Care, 162*, 41- 50. doi:10.1080/0300443001620104

Slade, A., Sadler, L. S., & Mayes, L. (2005). Minding the Baby: Enhancing parental reflective functioning in a nursing/mental health home visiting program. In L. Berlin, Y. Ziv, L. Amaya-Jackson, & M. Greenberg (Eds.). *Enhancing Early Attachments*. Guilford Publications; New York: 2005.

Solomon, J., & George, C. (1996). Defining the caregiving system: Toward a theory of caregiving. Infant Mental Health Journal, 17, 183-197. doi: 10.1002/(SICI)1097-0355(199623)17:3

Solomon, J., & George, C. (2006). Intergenerational transmission of dysregulated maternal

caregiving: Mothers describe their upbringing and childrearing. In O. Mayseless (Ed.), Parenting representations: Theory, research, and clinical implications (pp. 265-295). New York, NY: Cambridge University Press.

Sroufe, L. A. (1988). The role of infant-caregiver attachment in development. In J. Belsky & T. Nezworski (Eds.), *Clinical implications of attachment* (pp. 18-38). Hillsdale, NJ: Erlbaum.

Sroufe, L.A. (2005). Attachment and development: A prospective, longitudinal study from birth to adulthood. *Attachment and Human Development,* 7, 349-367. doi:10.1080/14616730500365928

Sroufe, L. A., Carlson, E. A., Levy, A. K., & Egeland, B. (1999). Implications of attachment theory for developmental psychopathology. *Development and Psychopathology*, *11*, 1–13. doi:10.1017/S0954579499001923

Sroufe, L. A., Schork, E., Motti, F., Lawroski, N., & LaFreniere, P. (1984). The role of affect in social competence. In C. E. Izard, J. Kagan, & R. Zajonc (Eds.), Emotions, cognition, and behavior (pp. 289 – 319). New York: Plenum.

Szajnberg, N. M., & Skrinjaric, J. (1993). Perceptions of infant affect in mothers of prematures: The IFEEL pictures assessment. In R. N. Emde, J. D. Osofsky, & P. M. Butterfield (Eds.), The IFEEL pictures: A New Instrument for Interpreting Emotions. Madison, CT US: International Universities Press, Inc. pp.185-194.

Thomas, R., & Zimmer-Gembeck, M. J. (2011). Accumulating evidence for Parent-Child interaction therapy in the prevention of child maltreatment. *Child Development*, *82*, 177–192. doi:10.1111/j.1467-8624.2010.01548.x

Thompson, R.A. *(*2008*).* Early attachment and later development: Familiar questions, new answers*. In* J. Cassidy*, &* P.R. Shaver *(Eds.), Handbook of attachment: Theory, research, and*

clinical applications, 2nd edition (pp. 348–365*). New York: Guilford Press.*

Tronick, E., Als, H., Adamson, L., Wise, S., & Brazelton, T. B. (1978). The infants' response to entra[men between contradictory messages in face-to-face interactions. *Journal of the American Academy of Child and Adolescent Psychiatry, 17*, 1-13. doi:10.1016/S0002-7138(09)62273

van IJzendoorn, M. H. (1995). Adult attachment representations, parental responsiveness, and infant attachment: A meta analysis on the predictive validity of the Adult Attachment Interview, *Psychological Bulletin, 117,* 387–403. doi:10.1037/0033-2909.117.3.387

van IJzendoorn, M. H., & De Wolff, M. S. (1997). In search of the absent father—Meta-analyses of infant–father attachment: A rejoinder to our discussants. *Child Development, 68*, 604 – 609. doi:10.2307/1132112

van IJzendoorn, M. H., Schuengel, C., & Bakermans-Kranenburg, M. J. (1999). Disorganized attachment in early childhood: Meta-analysis of precursors, concomitants, and sequelae. *Development and Psychopathology, 11*, 225–249. doi:10.1017/S0954579499002035

Verhage, M. L., Schuengel, C., Madigan, S., Fearon, R. M. P., Oosterman, M., Cassibba, R., Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (2016). Narrowing the transmission gap: A synthesis of three decades of research on intergenerational transmission of attachment . *Psychological Bulletin*, 142, 337-366. doi:10.1037/bul0000038

Wan, M.W., & Green, J. (2009). The impact of maternal psychopathology on child–mother attachment. *Archives of Women's Mental Health, 12*, 123–134. doi: 10.1007/s00737-009-0066-5

West, M., Adam, K., Spreng, S., & Rose, S. (2001). Attachment disorganization and dissociative symptoms in clinically treated adolescents. *Canadian Journal of Psychiatry, 46*, 627–631.

West, M., Spreng, S., Rose, S. M., & Adam, K. S. (1999). Relationship between attachment-felt security and history of suicidal behaviours in clinical adolescents. *Canadian Journal of Psychiatry, 44*, 578–583.

Zahn-Waxler, C., & Wagner, E. (1993). Caregivers' interpretations of infant emotions: A comparison of depressed and well mothers. In R.N. Emdy, J.D. Osofsky & P.M. Butterfield (Eds.), The IFEEL pictures: A new instrument for interpreting emotions (pp.175-184). Madison, CT, US: International Universities Press.

Zeanah, C. H., Benoit, D., & Barton, M. (1986). *Working model of the child interview*. Unpublished manuscript.